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**ABDOMINAL TUMOURS AND
ABDOMINAL DROPSY**

IN

W O M E N

With the Author's C.P.

ABDOMINAL TUMOURS AND

ABDOMINAL DROPSY



IN

WOMEN

BY

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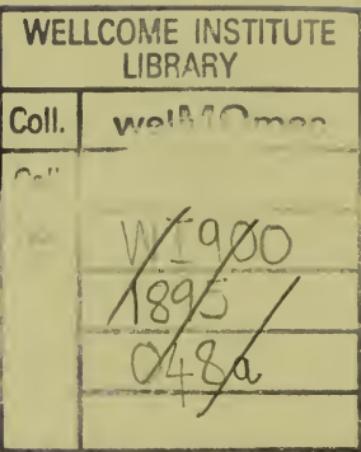


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WITH MUCH RESPECT AND ESTEEM

THIS WORK IS DEDICATED

TO

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SCOTLAND, AND PROFESSOR OF PRACTICE OF PHYSIC
IN THE UNIVERSITY OF EDINBURGH

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CHAPTER I

UTERO-GESTATION

THE uterus, which harbours under ordinary circumstances a fecundated ovum, becomes, as a rule, an abdominal tumour during the third month of pregnancy; and although no difficulty may in the majority of cases be experienced in determining the nature of a swelling of this kind, still it is not at all times an easy act. A woman who is living in wedlock, and who has not yet apparently reached the climacteric age, will suspect the existence of pregnancy if she cease to menstruate. It frequently happens, however, that a hæmorrhagic discharge of varying amount flows from time to time from the vagina whilst the uterus is occupied by a growing embryo; and it is sometimes remarked that conception takes place whilst the menstrual function is held in abeyance by lactation, or, independently of this influence, has not yet been re-established after

parturition. In such anomalous cases the patient is often unable to form any definite opinion regarding her condition, and the medical adviser is at a loss to know on what fact or facts to rely in estimating the probable duration of the pregnancy.

Usually the haemorrhage comes from the interior of the uterus, but in a few rare instances it springs from the cervix or vaginal canal in consequence of the invasion of these portions of the genital tract by some malignant growth. The disease may have originated since or shortly before conception occurred, but it can seldom have advanced far at the time of impregnation, as the discharge from a cancerous surface tends apparently to kill the spermatozoa. At the time of parturition the cervix may have become extensively infiltrated by the growth, but it is remarkable that no undue haemorrhage may then be caused by the passage of the child. When the blood flows from the interior of the uterus the breach in the continuity of the vessels may have occurred spontaneously, or have been induced by some physical or mental influence. In the former case the haemorrhage may be observed as early as the fourth, but generally not until the sixth week of pregnancy, and it may

recur from time to time and to a more or less marked extent throughout gestation without this phenomenon being thereby very materially disturbed.

When deprived of that important datum, the last menstrual period, we may be guided in expressing an approximate opinion regarding the probable duration of the pregnancy by the size of the abdominal tumour. If, however, we accept the statements which appear in the majority of our text-books on this point, we shall err in our calculations, as the uterus is undoubtedly larger at the different periods of pregnancy than authors would lead us to believe. At the fourth month the fundus extends often to within an inch of the umbilicus, whilst at the sixth it is invariably found two or more inches above this anatomical mark.

The abdominal tumour which is formed by the pregnant uterus occupies, as a rule, a more or less central position. It is commonly of a globular shape, although it is sometimes more prominent or more expanded on one side. Its consistence is variable, and it may be felt to harden or soften under the palpating hand. A sign of some diagnostic worth is the existence of a floating body in its interior, and occasionally we are enabled

to differentiate the various portions of the contained foetus. After the fifth, and sometimes even as early as the fourth month of pregnancy, the sounds of the foetal heart may be detected, and the movements of the child, too, may be perceived, when auscultation is practised. The heart-sounds are evidently most readily and most plainly heard when the back of the foetus is directed towards the anterior wall of the uterus.

The fact that the abdominal tumour is the body of the uterus more or less enlarged can only be determined by the bi-manual—the combined abdomino-vaginal—examination. Much difficulty may, however, be experienced in deciding that the abdominal tumour and the cervix are structurally continuous.

During the evolution of pregnancy—uterine and extra-uterine—the cervix sooner or later becomes soft and swollen, and comparatively a patulous condition of the external os is induced. These changes may be observed towards the end of the second month, but in some cases they remain ill-defined until the fourth or the fifth. The softness, which is peculiar to pregnancy, may to a certain extent be simulated by a flabby condition of the cervix, which appears to be of a nervous origin; consequently too much

importance must not be attached to an alteration in the consistence of this structure.

Ballottement is a sign of great worth in the diagnosis of pregnancy. It is obtained when the vaginal finger, placed preferably in front of the cervix, causes the foetus to tumble about in its liquid medium.

Whether the foetus develops in the uterus or outside of it, certain changes may usually be noted at an early period about the breasts. Almost immediately conception occurs more blood is directed to the mammary glands, and an increased activity causes these structures to become fuller and firmer. At the base of the nipple a characteristic greasiness is generally observed, and the areola becomes extended and more deeply pigmented. The skin in the neighbourhood of the nipple is studded with small tubercles, and during the later months a secondary spotted areola is often developed. After the third month, and in a few rare cases even earlier, a fluid of a slightly opalescent or distinctly milky appearance may be made to exude from the nipple when the breast is gently squeezed. In association with uterine and ovarian tumours, milk may be found in the breasts,

especially in women who have already borne children.

Retching, or actual emesis, is a symptom which is often complained of during, and at a very early period in pregnancy. It is generally most troublesome in the morning, when the erect position is assumed after a night's rest. It is caused* by a direct radiation of molecular disturbances from the uterine to the pneumogastric centre, and these disturbances are more likely to produce some untoward result when the impressibility of the nerve-centres is greatest—a condition of affairs which obtains soon after waking. In the early morning the pneumogastric centre receives impressions from the intestinal tract, and especially from the empty stomach, and it is quite possible that these stimuli may play some part in the production of the sickness of pregnancy. It will frequently be observed that this symptom is absent when the pregnant uterus is more or less flabby and wanting in tone, and as this state of the uterus tends to produce spontaneous haemorrhage, the absence of sickness is often remarked in association with this anomalous phenomenon.

* "The Cause of the Morning Sickness of Pregnancy," Oliver, 'Brit. Med. Journal,' October 1st, 1887.

During the early months of a first pregnancy there is commonly experienced a frequent desire to pass water, both during the day and the night, and whenever this symptom is complained of in association with amenorrhœa by an unmarried woman, a suspicion of pregnancy should be aroused.

The following are a few examples of anomalous cases of uterine pregnancy.

CASE 1. Spontaneous hæmorrhage occurring at the end of the fifth week, and continuing for forty-nine days.—Esther B—, aged 29, and married five years, has had two children. The last child, born eleven months ago, was not suckled. The menstrual discharge reappeared three months after this confinement. Three months and a half ago patient missed being unwell for five weeks, and thereafter she continued to lose more or less for seven weeks. For three weeks now she has observed no hæmorrhagic discharge.

Physical signs.—The abdomen is occupied by a central and globular swelling which extends to six inches from the pubes. It is soft and cystic. The cervix is soft, and the abdominal tumour is the body of the uterus much enlarged. *Per vaginam* the foetus is felt readily through the anterior wall of the uterus.

CASE 2. *Hæmorrhage induced by a fright when two months pregnant continues for ten weeks without interfering with the process of gestation.*—Elizabeth R—, aged 34, and married nine years, has had seven children and one miscarriage. The last child, born seven months ago, was not suckled. The patient menstruated as usual twice after this confinement, during the fourth and eighth weeks respectively after this event. She had missed being unwell for eight weeks, when she was frightened, and three hours later she started losing blood from the vagina. For ten weeks thereafter she continued to lose more or less every day.

On May 27th, 1891, the following physical signs were noted:—"The abdomen is very prominent, and occupying the region of the umbilicus is felt an ovoid cake-like mass, which measures transversely seven and a half inches and vertically from the pubes nine and a half inches. The cervix uteri is located very high in the pelvis, almost on a level with the promontory of the sacrum. It is flush with the vaginal roof, and the os is open. The abdominal tumour and the cervix are structurally continuous."

I was eventually informed that on October 5th, 1891, this patient gave birth to a living

and apparently full-time child. On May 27th the abdominal tumour, which measured vertically and transversely nine and a half and seven and a half inches respectively, contained therefore a foetus of four and a half months.

CASE 3. Hæmorrhage during pregnancy from epithelioma of the cervix; amputation of the cervix, and abortion eleven days thereafter.— Margaret K—, aged 31, and married thirteen years, has had four children; the last was born two years ago. For nine months patient has observed occasionally an intermenstrual discharge of blood, and during the last four months these hæmorrhages have increased in frequency and amount. She complains of no other symptom.

The lower abdomen is occupied by a central and globular swelling which reaches to midway between the pubes and the umbilicus. The cervix is expanded and invaded by epithelioma. The disease has not extended to the vaginal roof. The abdominal tumour is the body of the uterus enlarged.

Patient stated that she had never suspected the existence of pregnancy, as she had never noted any of the symptoms which

she had been accustomed to experience when in this condition.

The cervix was amputated. On the eleventh day after this operation the patient began to complain for the first time of pain, and simultaneously the temperature, which previously had never registered more than 99·4° F., rose to 104° F. Gradually the pain increased, and after existing about five hours the patient miscarried. The cervix dilated readily, and there was no haemorrhage of any account either during or after the birth of the foetus. The foetus appeared to be of four or five months. After the abortion was completed the temperature fell to normal.

CASE 4. Conception occurring whilst menstruation was held in abeyance by lactation.— Rachel A—, aged 21, and married two years, has had one child, which was born eight months ago. This child is still being suckled, and menstruation has not yet reappeared since the confinement. For seven days she has complained of a feeling of movement in the abdomen, but no other symptom of pregnancy has been observed.

The abdomen is occupied by a central globular and cystic swelling which reaches to the umbilicus. The cervix, which is

located rather towards the right wall of the pelvis, is very soft, and the os is extremely patulous. Through the anterior wall of the uterus the foetus is felt by the vaginal finger placed in front of the cervix.

CASE 5. Pregnancy in a woman who ever since the establishment of menstruation had menstruated with great irregularity.—Sarah C—, aged 25, was married in August two years ago. Before marriage menstruation recurred seldom, usually after an interval of seven or eleven months. After marriage patient was twice unwell, in October and December respectively. In the following June she consulted me, being then desirous of knowing whether she was pregnant or not. Since December there had been no reappearance of menstruation. For four months she had complained of sickness, especially in the morning, and during this same time she had observed that her abdomen was increasing in size, and that the breasts were fuller and rather tender.

The abdomen is occupied centrally by a globular swelling, which reaches from the pubes to one inch above the umbilicus. It contains a solid body. Auscultation on the left side (iliac region) reveals the foetal

heart. The appearance of the breasts is characteristic of pregnancy, and colostrum is obtainable from both. The cervix is soft, and the os is patulous. The abdominal tumour is uterine.

CASE 6. Conception occurring after the menstrual function had begun to wane and marked irregularity of this phenomenon had been observed for nearly three years.— Elizabeth B—, aged 43, and married twenty-two years, has had five children; the last was born seven years ago. Until three years ago menstruation had recurred with great regularity, but during the last eighteen months patient has only menstruated four times, and the last occasion was five months ago. For one month she has complained frequently of pain in the vagina on walking, and during the last week she has experienced a sensation of movement in the abdomen, but otherwise she has complained of no symptom of pregnancy.

The abdomen is occupied by a central and globular swelling, which extends to nine inches from the pubes and measures transversely eight and a half inches. Its consistence is difficult to determine, as the abdominal walls are extremely thick. The

breasts are not characteristic of pregnancy, but they are suspicious of this phenomenon, as the base of each nipple is greasy. No fluid can be squeezed from the mammary glands. The cervix is soft and the os is open. The abdominal swelling is the body of the uterus enlarged.

I was in this case unable to satisfy myself regarding the existence of pregnancy until six weeks later, when I felt the foetus through the anterior wall of the uterus *per vaginam*, but even then the foetal heart could not be detected, neither could colostrum be obtained from the breasts. Dr. Hugill, of Balham, informed me that he delivered this patient on September 16th.

Cases in which conception takes place after the irregularity of menstruation which so often precedes the menopause has been observed, are of infrequent occurrence.

At any period in the evolution of pregnancy the foetus may die, but abortion will not necessarily ensue forthwith, and no untoward disturbance or well-marked alteration in the symptoms of the patient may indicate what has happened. In our deliberations regarding the occurrence of intra-uterine death we must consider carefully the clinical history

and the physical signs. The consistence of the uterine tumour is generally different from that of a normal pregnancy, and the size is not usually in keeping with the clinical history.

The following four cases are good examples of intra-uterine death, but in two only was the enlarged uterus felt abdominally when the patients came under my observation.

CASE 1. Intra-uterine death, probably on the 195th day of pregnancy and in consequence of an epileptic fit; child retained thereafter for sixty-nine days.—Jane C—, aged 22, and married twelve months, was sent to me on March 29th, 1893, by Dr. Paul, of Sutherland Avenue. The patient stated that she was last unwell on July 20th, 1892, and although she considered herself pregnant she did not appear to be increasing in size.

The abdomen I found was occupied by a central and globular swelling which extended from the pubes to close upon the umbilicus. No uterine souffle nor foetal heart was detected when the tumour was auscultated. Colostrum was obtained from both breasts. The cervix uteri was soft and the os was patulous. The anterior segment of the uterus did not appear to be so cystic as one would have expected.

On April 10th this patient was confined, *i. e.* on the 264th day of the pregnancy, and Dr. Paul kindly kept the foetus for me. Dr. Dalton examined it, and expressed the opinion that it was most probably a six months' foetus.

The patient was about six months pregnant when she was seized by her first epileptic fit, and it is quite possible that the child's death was caused by this attack.

CASE 2. Intra-uterine death from imperfect implantation of the chorionic villi.—Edith S—, aged 29, and married nine years, has had three children and three miscarriages; the last child was born two years ago. Patient menstruated during the last week in May, and thereafter she observed no haemorrhagic discharge from the vagina until the third week in July, and daily since then until now (November 4th) it has flowed. The haemorrhage, she affirms, has always been more profuse during the night. For three weeks or a month she has complained of slight pains in the left side and back.

Physical signs.—The abdomen is occupied by a central and globular swelling which extends from the pelvis to a spot midway between the pubes and the umbilicus. The

cervix uteri is lying far back in the hollow of the sacrum. It is regular and soft, and the os looks downwards. The vaginal roof in front of the cervix is pushed down by a swelling which is slightly cystic and is continuous with the abdominal tumour. The abdominal tumour is the body of the uterus enlarged. The breasts are not suspicious of pregnancy, and no colostrum can be obtained from them. No sounds are heard over the tumour.

Dr. Davidson, of Goswell Road, wrote later to inform me that this patient aborted ten days after I saw her, and that the foetus appeared to be of the fourth month. Reckoning from the menstruation which occurred during the last week in May, the patient had carried the product of conception a little more than five months when she came under my observation ; but the size of the uterus was not in keeping with this duration, and the tumour was less cystic than I should have expected to find it had the foetus been alive.

CASE 3. *Intra-uterine death in consequence of hæmorrhage into the substance of the placenta about the fourth month ; mummification of foetus.*—Margaret R—, aged 26, and

married eight years, has had four children and no miscarriage. The last child, which was born two and a quarter years ago, was suckled for two years, but the menstrual discharge reappeared after this confinement, when the child was fifteen months old. Menstruation recurred regularly thereafter until March 20th, and after this there was no haemorrhagic discharge from the vagina until August 15th, when patient was slightly unwell for one week. From August 15th until September 17th, when the patient came under my observation, there had again been complete amenorrhœa. She had experienced no pain, and she had complained of no symptom which had led her to suspect that she was pregnant.

Physical signs.—Nothing was noted by abdominal examination. The following are the notes of the vaginal examination. The cervix, which is slightly soft, is located on the left side of the pelvis. In front of the cervix and rather to the right of it is felt a somewhat lobulated swelling of about the size of a small cocoa-nut. This swelling, which is the body of the uterus enlarged, has a semi-cystic feel, and it seems to contain a solid body.

On the morning of October 22nd patient

started losing blood *per vaginam*, and soon afterwards she began to complain of pain in the lower abdomen. The pain and haemorrhage continued off and on for twelve hours, when a mass was expelled. As I had informed the patient that I desired to see whatever came away, the husband brought this mass to me; and the following is an extract from the description of this pathological product as furnished by Dr. Dalton. "Foetus—it is five inches long, and the head is disproportionately large. The eyelids are open, but no individual parts of the eyeball can be distinguished. The fingers and toes are distinct, but the presence of nails is doubtful. . . . Placenta is hard and cup-shaped, and about the size of half a tennis-ball.

CASE 4. *Intra-uterine death, cause probably inherent in the embryo.*—Edith S—, aged 40, and married thirteen years, has had seven children; the last child was born eighteen months ago. On September 6th, 1893, this patient consulted me. The history then given was that she had menstruated as usual from the 10th to the 14th of April, 1893, that thereafter there was complete amenorrhœa until six weeks ago,

when she observed a slight haemorrhagic discharge from the vagina, and this discharge has continued to flow every day since. She complains of no pain, and has not experienced any symptom of pregnancy.

Physical signs.—The abdominal walls are flaccid, but even deep palpation detects nothing unusual. The cervix uteri is located rather high and far back towards the right side of the pelvis. It is somewhat soft, but the os is not patulous. The body of the uterus is felt in front lying on the pelvic floor. It is verted and enlarged, but the size is not equal to more than a ten weeks' pregnancy. The enlarged uterus is not specially soft.

On September 22nd patient started losing blood from the vagina, but no pain was complained of until the morning of the 24th, when pain of a labour-like character was experienced and a mass was expelled, which was kept and brought to me. This mass was a sac. It was of the size of a large orange, and contained a quantity of fluid of a deep biliary colour. The embryo was distinct, and was not more than an inch and a half in length.

CHAPTER II

HYDRAMNIOS—HYDATID MOLE

*Pregnancy with Dropsy of the Amnion—
Hydramnios*

UNDER ordinary circumstances the quantity of the amniotic fluid varies, but occasionally it becomes greatly increased, and produces what is known as dropsy of the amnion, or hydramnios. This condition obtains more frequently in twin pregnancies, and often one foetus is found dead. The excessive secretion may be more or less suddenly induced, and it may be observed to have occurred as early as the fourth month of gestation. We know nothing about its causation, although it appears sometimes to develop when some severe physical or mental shock is sustained during the third or fourth months of pregnancy.

The abdominal tumour produced by hydramnios occupies usually a more or less central position. Its size exceeds greatly

that which we would expect if the case were one of ordinary pregnancy. It may be somewhat irregular in shape, and fluctuation is generally well marked. The sound of the foetal heart may be detected, and the changes about the breast will be the same as those observed in an ordinary case of pregnancy. The cervix uteri will be more or less soft, and by bimanual examination one will as a rule be able to determine that the abdominal tumour is the body of the uterus greatly enlarged.

Treatment.—If the distension distresses the patient, abortion or premature labour should be induced. Uterine inertia, after the contents of the organ have been removed, may prove troublesome by favouring the occurrence of haemorrhage.

The following is a typical example of this variety of abdominal tumour.

CASE. *Hydramnios developing immediately after a fall sustained when the patient was nearly four months pregnant.*—Mary S—, aged 24, and married three years, has had one child and one miscarriage. She was last unwell in June, 1892. Patient thereafter considered herself pregnant, and everything appeared to progress naturally until the

middle of October, when she fell downstairs. On the morning after the fall patient remarked that her abdomen was much larger than when she retired to rest on the previous night. She came under my observation during the last week in November, and during the two weeks preceding her visit to me the abdomen had somewhat rapidly increased in size.

The following are the physical signs which were noted when the patient considered herself about five and a half months pregnant. The abdomen is occupied by a central swelling, which extends from the pubes to close upon the ensiform cartilage. It bulges very markedly in the right iliac and lower portion of the right lumbar regions. Fluctuation is most readily elicited. The sounds of the foetal heart were detected low down on the right side. The cervix uteri, which was soft, was located high in the pelvis. No portions of the foetus could be felt, either abdominally or vaginally. The breasts were characteristic of pregnancy.

This case was a twin pregnancy, and when abortion was induced in the early part of December it was evident that one foetus had been dead some weeks.

Hydatid Mole.

This pathological product of conception is developed from the chorionic villi, and I am of opinion that the increased formation of mucous tissue which constitutes this mole begins whilst the villi are still non-vascular.

It may be produced by a woman who hitherto has given birth to healthy children, and who previously may never have miscarried. It may occur in the same woman more than once, and sometimes even as the result of several consecutive impregnations.

There is usually a history of amenorrhœa for about three months, after which a more or less marked haemorrhagic discharge makes its appearance, and continues to flow until the uterus gets rid of the pathological product.

The size of the uterus may correspond fairly well with that of the supposed duration of the pregnancy, or it may be slightly larger. The breasts as a rule are not characteristic of pregnancy. On auscultating the tumour, which resembles that of an ordinary gestation, no sounds are heard.

On vaginal examination portions of the mole may be found hanging through the cervix.

Treatment.—Unless the haemorrhage continues severe in spite of rest and medicinal treatment, it is advisable to allow the uterus to expel its contents naturally. If it is, however, necessary to interfere, the cervix should be dilated sufficiently, if possible, to introduce the hand into the uterus, and forthwith this organ should be emptied.

CHAPTER III

UTERINE PREGNANCY COMPLICATED BY FIBRO-MYOMATOUS GROWTHS.

AN uterus which is the seat of fibro-myomatous tumours may harbour for a greater or less length of time—until even the completion of development—a fecundated ovum. Under such circumstances the evolution of pregnancy may be attended by no untoward symptom, and parturition may be effected as in any ordinary case. Fatal hæmorrhage may occasionally result, or the tumour or tumours may be so located that delivery cannot be naturally accomplished (as in Case 2), and the child may have to be removed by abdominal section. The dissolutionary changes consequent upon child-birth may exert a beneficial influence, as the tumours have sometimes decreased materially in size and even disappeared after parturition. In a few rare cases spontaneous enucleation may occur, and in this manner one or more tumours may be expelled with

the placenta or after this structure has been removed.

The presence of fibroid growths in the uterus is undoubtedly a hindrance to gestation, but we are at present unable to account for this observation, as we are unfortunately still ignorant of the cause or causes which determine the location at which the placenta shall be formed.

The tumour which is produced by a pregnant uterus which is also the seat of fibromyomatous growths is often more or less irregular, but it may differ in no respect from that of an ordinary pregnancy except, perhaps, in that it is usually of a larger size than the clinical history would lead us to expect.

The following four cases are good examples of uterine pregnancy complicated by fibromyoma.

CASE 1. *Pregnancy occurring for the first time at the age of forty-five in an uterus with fibro-myoma; no haemorrhage during gestation; abortion during the fifth month.*—Elizabeth L—, aged 45, was married on October 23rd, 1890. She came under my observation on April 11th, 1891, and the following history was then given:—"Last menstruation was

on November 15th, 1890. During the last three months complained of pain in the left iliac and hypogastric regions, and remarked that abdomen was increasing in size. For two months frequent desire to pass water day and night. Since marriage patient had never experienced even a feeling of sickness."

Physical signs.—There is slight œdema of both legs, but more especially of the right. The abdomen is greatly distended, and is distinctly more prominent on the left side about the level of the umbilicus. Corresponding with this greater prominence is felt a hard globular swelling, with a small nodule of about the size of an almond projecting from its surface. The right half of the abdominal tumour reaches to the level of the umbilicus, and is cystic. The left half has caused the ribs to stand out more distinctly on this side.

The breasts contain no colostrum, and there is nothing special to note about them except a little greasiness about the base of the nipples.

Auscultation of the tumour revealed nothing but a faint blowing sound on the right side very low down.

The cervix is soft, and the canal is very

open. Posteriorly and on the right side the vaginal roof is occupied by a smooth and convoluted swelling. The abdominal tumour is uterine.

Dr. Gwynn, of King's Cross Road, informed me that this patient miscarried on April 27th, and that the foetus was in keeping with the supposed duration of pregnancy, viz. five months.

On May 23rd I again examined this patient. The physical signs then were the following :—The lower abdomen is occupied by a small swelling, which is located centrally and rises out of the pelvis to four inches above the pubes. This swelling is irregular. On the right side a small subperitoneal nodule is felt. In front of the cervix the vaginal roof is occupied by a swelling which is continuous with the abdominal tumour, and the whole is the body of the uterus much enlarged.

CASE 2. *Fibroid of uterus with pregnancy; no haemorrhage during gestation; delivery by abdominal section; recovery.*—Emma K—, aged 36 and single, was sent to me on September 28th, 1892, and the history then given was the following :—Last menstruation occurred on June 21st, and continued as usual for five days. For two months she has com-

plained of sickness in the morning, and has remarked that her abdomen was increasing in size.

Physical signs.—The abdomen is occupied by an irregular swelling which appears to be bilobed. The left lobe, projecting more forward, reaches to two and a half inches above the umbilicus from the pubes, whilst the right extends to five inches above the umbilicus. The girth at the umbilicus is thirty-five and a half inches. There is a large saucer-like mass at the summit of the left lobe, and two small nodules close to the left Poupart's ligament. The consistence of the tumour is not uniform. Just within the entrance to the vagina is felt a rounded and tense swelling of the size of a foetal head. The cervix appears to be located on the left side above the level of the pubes, but it cannot be distinctly felt. Colostrum was obtained from both breasts.

Pregnancy was allowed to proceed until the last week in February of the following year, and as it was then evident that delivery could not be naturally effected, the child and the whole uterus too was removed by abdominal section. The child lived a few hours, and the mother made a good recovery.

CASE 3. *Pregnancy in an uterus with fibro-myomatous growths; haemorrhage during gestation; abortion.*—Louisa S—, aged 39, and married eighteen years, was sent to me by Dr. Nicholson, of East Greenwich, on February 21st, 1894. The following history was then obtained. She had menstruated as usual very profusely on November 12th, 1893, for ten days, and thereafter she saw nothing again until the last week in January, 1894, when haemorrhage set in one night whilst patient was asleep, and since then, *i. e.* during a period of nearly four weeks, she has noticed a haemorrhagic discharge from the vagina every day. She considered that she had conceived, but was under the impression that she had miscarried.

Physical signs.—The abdomen is occupied by a hard central and globular swelling which extends from the pubes to the level of the umbilicus. No sounds are heard over the tumour. The breasts are fairly characteristic of pregnancy, and colostrum is obtained from both. The cervix is soft and expanded. The abdominal tumour is the enlarged uterus.

On October 3rd, 1888, I had seen this patient, and the uterus then was enlarged in consequence of the presence of fibro-myoma-

tous growths, and its summit extended to three inches above the pubes.

On April 22nd, 1894, I received a letter from Dr. Nicholson informing me that this patient aborted on April 17th ; and he added, "she had no loss to speak of, and was in pain, off and on, for not more than thirty hours."

CASE 4. Uterine pregnancy complicated by fibro-myomatous tumours; no haemorrhage during gestation; abortion.—Clara H—, aged 33, was married on September 13th, 1893. On June 11th, 1894, I saw her in consultation with Dr. Greet, of Vernon Square, and the history then given was that after marriage patient menstruated regularly until January 20th, 1894, the date on which she was last unwell, and that there had been complete amenorrhœa since. For five days she had complained of severe attacks of pain, and occasionally of sickness.

Physical signs.—The abdomen is occupied by an irregular swelling, which is more prominent on the right side, and extends from the pubes to the umbilicus. The lower and central portion of the tumour is somewhat flat, and appears to be cystic. The cervix uteri is felt just within the entrance

to the vagina. It is elongated, and its consistence is that of an unimpregnated uterus. No portion of the abdominal tumour could be felt *per vaginam*.

Colostrum was obtained from the right breast, and the appearance of the breasts was suspicious of pregnancy. Auscultation of the tumour revealed no sounds.

On August 3rd this patient miscarried, and the tumour thereafter was found to reach to the level of the umbilicus.

CHAPTER IV

FIBROID TUMOURS OF THE UTERUS—FIBROMA, MYOMA, AND ADENOMA

THE so-called fibroid tumours of the uterus are composed of tissues which are homologous with those which enter into the formation of the uterus itself. They are capable of being subdivided into three varieties—fibroma, myoma, and adenoma—according as the neoplasm is made up in greater part of fibrous, muscular, or gland tissue. Clinically, it is impossible in the majority of cases to determine which structure enters most largely into the composition of these innocent tumours, so we may retain the use of the word fibroid for all practical purposes.

Fibroid tumours of the uterus develop, as a rule, during the period of sexual activity, but occasionally they are detected for the first time after the menopause, and in a few rare cases they may even originate before menstruation is established. Independently of any degenerative change some fibroids grow with great rapidity, whilst others re-

main more or less stationary for years. The rapidly growing tumour is generally soft in consistence and well supplied with blood-vessels, whilst that which grows tardily is often more firm and less vascular.

The uterus which is invaded by one or more fibroid growths is, as a rule, uniformly or irregularly enlarged, but occasionally the size and shape even of the organ is not appreciably altered. In the latter case the tumour, which may grow inordinately, is pedunculated, and almost entirely covered by peritoneum. It sometimes happens that this variety of fibroid severs its connection with the uterus altogether, but having previously contracted adhesions with the gut and mesentery, it may after displacement be enveloped and nourished by these structures. The intra-mural or submucoid tumour may distort and distend the uterine cavity, and in consequence of a more or less extensive destruction of the mucous membrane which at first covered and confined either of these varieties, enucleation may be naturally effected, or this process may be interrupted and sloughing may ensue. In a few cases, as a result of a general fibroid change, the body of the uterus may be transformed into a tumour.

The abdominal tumour, which is formed by one or more fibroids developing in or from the uterus, as well as that which results from a general transformation of the organ, occupies commonly a more or less central position. It may, however, extend in a lateral direction, and occasionally we may even find uterine fibroids growing into the substance of the broad ligament. Fibroid tumours of the uterus are sometimes very irregular. They vary in consistence. Usually they are firm, but when very vascular they may be almost fluctuant. The character of these growths may, however, be greatly altered by degenerative changes. In consequence of the deposition of lime salts in these neoplasms they may become stony hard, and in this manner the uterine calculi of the older writers were formed. œdema, or the accumulation of fluid in the inter-cellular spaces of uterine fibroids, is sometimes observed, and cysts of a simple or hæmorrhagic nature are occasionally produced.

Symptoms and complications.—I have found it advantageous to group these two together, as the symptoms resulting from the presence of an uterine fibroid are often wholly dependent upon existing complications. Insidious

in their growth, these innocent tumours may produce little or no inconvenience, except that accruing from size and pressure. For years they may have existed without the patient's knowledge, and it frequently happens that they are detected quite accidentally.

Menorrhagia, although not an invariable association, is nevertheless the most common symptom of uterine fibroid. The haemorrhage is sometimes very profuse, but its amount is not in any way commensurate with the size of the tumour. With a tumour reaching to the umbilicus the monthly discharge may be scant, whereas the most profound anaemia may be caused by a growth which can only with difficulty be defined. For two years I have had under my care a patient with a small fibroid in the anterior wall of the uterus. When first seen the growth was of about the size of half a walnut, and the patient, who was forty-two years of age, had been compelled to maintain the recumbent position almost uninterruptedly since the age of thirty-eight, on account of menorrhagia and the resulting anaemia. The tumour has during the two years increased slightly in size, but the menstrual discharge is now no longer profuse, and the patient is

able to walk three or four miles at a stretch without inconvenience. Menorrhagia is generally complained of in association with a tumour which distorts and distends the uterine cavity, whereas subperitoneal fibroids may attain a good size without the menstrual discharge being thereby unduly augmented, and complete amenorrhœa is occasionally induced for a few months when a rapidly growing tumour extends into the substance of the broad ligament. During the evolution of a fibroid tumour of the uterus haemorrhage is sometimes provoked by sexual intercourse, but this is seldom important.

Pain at or about the time of menstruation is occasionally the earliest manifestation of a fibroid developing in the uterus. It sometimes, however, is a more or less constant symptom, and may be induced by a variety of causes. If a tumour which is tending to become pedunculated grows towards the mucous surface its presence may at any time excite uterine contraction, and pain of a labour-like character may be experienced until the offending growth is expelled or removed from the cavity of the uterus. The veins, superficial and deep, of a uterine fibroid may inflame, and thereafter the disorganised vessels may continue to cause pain for a

more or less indefinite length of time. The peritoneal covering of the tumour may inflame and become adherent to other structures, more especially the gut; and pain, which is sometimes very severe, may be thus induced. Simple tension or pressure upon nerves may also cause pain.

A tumour which grows towards the cavity of the uterus may gradually corrode the mucous membrane covering it, and being consequently deprived of a certain amount of nourishment, it may eventually slough. When necrosis of a fibroid is thus established an offensive discharge from the vagina is observed, and symptoms of sapræmia may at any time appear.

Leucorrhœa, so called, is often noted in association with uterine fibroids, and the discharge, which is generally most copious after menstruation, is frequently very watery.

Bladder symptoms are common. A difficulty only in passing water may be experienced; the bladder cannot be induced to expel its contents so easily, and the act of micturition cannot be so rapidly completed. Incontinence or retention of urine, at or about the time of menstruation more especially, is sometimes observed, and in a few rare cases

retention may even occur after the menopause. The bladder, we find, is frequently more or less extensively incorporated with the anterior wall of the enlarged uterus, and it is evident that the functions of an organ which is thus attenuated may readily be disturbed.

The sigmoid or rectum may be encroached upon by a fibroid growth of the uterus, but complete obstruction of the gut is in this manner rarely produced.

Ascites is seldom noted in association with an uterine fibroid.

The presence of these tumours in the cavity or substance of the uterus lessens, undoubtedly, the possibility of gestation ; but conception having occurred, the maturation of the product may be effected (see "Uterine Pregnancy complicated by Fibromyomatous Growths").

Treatment. — These tumours should be carefully watched, for years if necessary, and operative interference should not be hurriedly suggested. Too commonly, I regret to say, the blackest prospect is depicted to the patient or her friends, with the idea apparently of so frightening them that they will acquiesce to almost anything. In our deliberations we should be guided by the

symptoms and complications existing in each case, by the size of the tumour, and by the station and general circumstances of the patient. The growth of uterine fibroids is sometimes slow, and after the menopause they may gradually decrease in size, and even disappear. In deciding, therefore, what should be recommended, the age should not be overlooked. It should be remembered, too, that however profuse the menstrual discharge may be, it may eventually and at any time abate.

Medicinal treatment.—For menorrhagia the following may be administered during menstruation :—Ergot; iron and strychnia; the bromides with ergot or hamamelis; gallic acid with acid infusion of roses; ferro-alumen. For dysmenorrhœa: phenazonum; Spiritus Ætheris Nitrosi and Ol. Juniperi.

Operative treatment.—In well-chosen cases curettage of the interior of the uterus may be practised with much benefit. Sometimes both ovaries and both tubes have to be removed by abdominal section, and occasionally hysterectomy becomes imperative. Enucleation *per vaginam* is a dangerous and uncertain operation, and, considering the risk, enucleation by abdominal section is not a satisfactory procedure.

The following cases of uterine fibroid have been selected to illustrate the various points of interest regarding these innocent tumours.

CASE 1. Fibroid transformation of the body of the uterus with practically no symptoms.—Elizabeth J—, aged 35, and married eleven years, has never been pregnant. The menstrual discharge, which has always been scant, has during the last two years become markedly less. She has always had a “high stomach,” but for twelve months now she has observed that for three or four days before each menstruation the abdomen has seemed more full. She complains of no pain.

The abdomen is occupied by a central and globular swelling, which rises out of the pelvis and extends to close upon the level of the umbilicus. The cervix uteri is soft, and resembles that of a pregnant uterus. The abdominal tumour, which is uniformly firm in consistence, is uterine.

This patient remained under observation for five years, and during this time the abdominal tumour increased but little in size, and the cervix presented the same character.

CASE 2. *Fibroid chiefly submucoid with menorrhagia; hysterectomy; recovery.*—Fanny H—, aged 36, and single, has complained of excessive haemorrhage at menstrual period for seven years. Two years ago she remarked that her abdomen was increasing in size, and during the last six months it has become rapidly bigger. The patient, who is a cook, is so anaemic that for twelve months she has been totally incapacitated for work.

The abdomen is occupied by a firm and uniform tumour, which extends from the pubes to two inches above the umbilicus. The cervix is located high in the pelvis, and the abdominal tumour is the enlarged uterus.

Hysterectomy was performed. The stump was treated extra-peritoneally, and six weeks after the operation the patient was able to travel to her home at Margate.

CASE 3. *Subperitoneal pedunculated fibroid with scanty menstruation; no alteration in the size or shape of the uterus; myomectomy; recovery.*—Annie V—, aged 28, and married four years, has never been pregnant. Menstruation recurs regularly every month for one day, but during the last two years the discharge has become exceedingly scant. She stated that for some time (but how long

she was uncertain) her abdomen had been increasing in size.

The abdomen is occupied by a central and globular swelling, which extends from the pubes to three inches above the umbilicus. The cervix is central, and the os uteri is rather patent, although not soft. The abdominal tumour is continuous with the body of the uterus.

The tumour, which was an oedematous sub-peritoneal and pedunculated fibroid growing from the fundus uteri, was removed by abdominal section. The stump was treated extra-peritoneally, and the patient was allowed to be on the couch five weeks after operation.

CASE 4. *Fibroid of the uterus growing in the substance of the left broad ligament; menorrhagia; myomectomy; recovery.*—Annie G—, aged 26, and married nine years, has had one child. The child was born twelve months after marriage. Patient complains of pain in and swelling of the abdomen. She states that two years ago she fell downstairs, and that ever since she has complained more or less of pain in the abdomen. Soon after the fall she detected a swelling in the left iliac region, and this has somewhat rapidly in-

creased in size. For twelve months she has observed the menstrual discharge has been excessive.

The abdomen is occupied by a swelling which is located more especially on the left side, but extends two inches to the right of the umbilical vertical line. It rises out of the pelvis, and reaches to one inch above the level of the umbilicus. It is soft and appears to be almost cystic, although fluctuation cannot be elicited. The cervix is closely applied to the right wall of the pelvis. The os uteri is rather patent. In apposition with the right portion of the abdomino-pelvic tumour the body of the uterus, enlarged, but well defined, is detected by bimanual examination. The left fornix of the vagina is occupied by a globular swelling which extends into Douglas's pouch. The pelvic mass is continuous with the abdominal swelling, but the whole appears to be distinct from the uterus.

With the idea that the tumour was either an ovarian cyst developing into the broad ligament, or a broad ligament cyst, I decided to remove the growth. On opening the abdomen the tumour was found to be an oedematous fibroid growing from the left side of the uterus in the substance of the broad ligament. With difficulty and careful treatment

of the sigmoid the tumour was eventually shelled out of the broad ligament, and the pedicle was dealt with extra-peritoneally. The stump was very large, and this necessitated the patient being confined to bed for twelve weeks after the operation. She is now, two years after the operation, in good health.

CASE 5. *Œdematos uterine fibroid; incontinence of urine before and during menstruation; hysterectomy; recovery.*—Mary M—, aged 40, and married seventeen years, has had two miscarriages. Up till three months before coming under observation the menstrual discharge had usually continued for four days, but it is now excessive, and flows for seven days. Three years ago patient detected a small lump in the left iliac region, and during the last six months it has increased greatly in size. For six months patient has remarked that for two or three days before and during menstruation the water dribbles constantly away.

The abdomen is occupied by a tumour, which extends transversely five inches to the left and three inches to the right of the linea alba. It rises out of the pelvis, and reaches vertically to the level of the umbi-

licus. It is soft, but not fluctuant, and it presents several small outgrowths on both sides. The cervix is located towards the right side of the pelvis. The vaginal roof in front of the cervix is pushed down by a portion of the abdominal tumour, which is the greatly enlarged body of the uterus. It is evident that the bladder is extensively incorporated with the anterior portion of the abdomino-pelvic tumour.

This patient was seen from time to time during a period of three years, but the tumour being oedematous grew somewhat rapidly, and eventually caused the patient to emaciate. I decided therefore to remove it, which I did in the usual manner. The pedicle was treated extra-peritoneally. The bladder was incorporated with the anterior portion of the tumour to the level of the umbilicus. To obtain a pedicle the bladder and sigmoid had to be stripped from the tumour. Although the greatest care was exercised, a portion of the bladder must have been included in the wire of the serre nœud as urine made its appearance by the side of the stump in the abdominal wound on the fourth day after operation. The fistulous opening into the bladder thus produced closed during the fifth week, and the patient was allowed

to take carriage exercise after the sixth week.

The tumour weighed, with the fluid which had exuded from it, 28 lbs. Twelve months after the operation the patient was in excellent health, and was travelling on the Continent.

CASE 6. *Necrosis of an intra-mural fibroid growing towards the cavity of the uterus; sapræmia; death.*—Georgina W—, aged 44, and married eight years, has never been pregnant. Six years ago patient remarked that her abdomen was increasing in size. Two years ago she began to lose profusely at the menstrual periods. For five months she has complained of a copious and offensive discharge from the vagina, and, with the exception of fourteen days before seeing me, when there was free hæmorrhage from the vagina, the discharge has not, during the offensive period, been even tinged with blood. She is emaciated and most anæmic. At the time of coming under my care she was sapræmic to a high degree; the pulse ranged from 120 to 130, and the temperature from 99° F. to 102° F. On the ninth day after admission into hospital she died.

The physical signs on admission were the

following. The abdomen is occupied by a central and globular tumour, which rises out of the pelvis and extends to within one inch of the umbilicus. It is soft in consistence. The cervix is central. The os is dilated, and occupying it is felt a softish rounded mass which appears to be of a diameter of about one inch and a half. This mass is continuous with a large growth which is extensively attached to the uterine wall, and has distended the cavity of the organ.

On account of the sessile nature of the growth and the extent of its attachment hysterectomy was the only feasible operation, but unfortunately the condition of the patient would not admit of such a procedure.

Necropsy.—The peritoneum contained a quantity of pus. The uterus, which was of about the size of a four months' pregnancy, was removed, and the cavity, when opened, revealed a large shreddy and sloughy growth, which was practically attached to three quarters of the uterine wall.

CASE 7. *Uterine fibroid, producing retention of urine after the menopause.*—Sarah H—, aged 55, and married eighteen years, has had one child. She ceased menstruating four years ago.

Until twelve months ago patient had never complained of any bladder trouble. At first she observed a difficulty in emptying the bladder, but during the last four weeks there has been complete inability to void urine, and the catheter has had to be passed daily.

The abdomen is occupied by a swelling which is rounded, and is located more especially in the right iliac region. It rises out of the pelvis, and extends to a point midway between the pubes and umbilicus. The cervix, which is large, is located towards the right wall of the pelvis, and is pressed against the pubes. Behind the cervix is felt a hard globular swelling, which is pushing down the vaginal roof. This swelling is continuous with the abdominal tumour and with the uterus.

CHAPTER V

CYSTS OF THE UTERUS

THE intercellular spaces of an uterine fibroid are not infrequently more or less extensively infiltrated with serous fluid, and by the fusion of oedematous strands of tissue well-marked cavities may be formed. It seldom happens, however, that these cysts attain a large size except when some blood-vessel which has not been obliterated is opened into whilst the process of disintegration is proceeding. The blood which is thus extravasated tends after clotting to become disorganised, and in this manner cysts of a greater or less size may be evolved. Independently of any degenerative change of a decided character, a true haemorrhagic cyst may form, as in Case 3, in a fibroid of the uterus, but in cases of this description the blood shows no disposition to clot, and remains liquid throughout. In an uterus which contains one or more fibroid growths, the cervical canal may after the menopause

become occluded, and in consequence of the rupture of a varicose vein into the cavity of the organ, hæmatometra may ensue. Some innocent tumours of the uterus are composed more or less entirely of adenoid or glandular tissue, and by the transformation of this material, as in the case of the ovary, uni- and multilocular cysts may occasionally be produced. Hydatid cysts of the uterus are extremely rare. I have seen one case, but in this instance the cyst was so small that the infected organ did not rise out of the pelvis. It is quite possible, however, that hydatid cysts of the uterus might result in the production of an abdominal tumour.

The symptoms observed in association with cysts of the uterus may resemble those of an ordinary fibroid of this organ, and the physical signs are very similar, but fluctuation in the former case may be readily elicited.

The following three cases are good examples of uterine cysts; each cyst possessed a distinct lining membrane.

CASE 1. *Three subperitoneal pedunculated tumours arising from a fibroid uterus; one pedunculated growth converted into a cyst contained twenty ounces of blood-coloured fluid*

and a quantity of broken-down blood-clot; hysterectomy; recovery.—Laura S—, aged 37, and married eighteen years, has had three children; the last child was born eleven years ago. For twelve years patient has remarked an increase in the amount of the menstrual discharge.

For twelve years she has complained of an enlargement of the abdomen, but during the last six months it has rapidly increased in size. There is no pain.

The abdomen is occupied by an irregular swelling, which rises out of the pelvis and extends to two inches above the umbilicus. It is located centrally, but extends four inches to the left and three inches to the right of the linea alba. In close apposition with this swelling, and occupying the right iliac region, is felt an irregular and separate swelling of about the size of a cocoa-nut. The larger swelling is fluctuant, but the smaller is firm in consistence.

The cervix uteri, which occupies a fairly central position, is located rather high in the pelvis. To the right of the cervix is felt a small, hard swelling, which is continuous with the smaller abdominal swelling in the right iliac region; and it is evident, too, that this mass is continuous with the body of the

uterus. The larger abdominal and fluctuant tumour appears also to be continuous with the uterus.

Operation by abdominal section.—Hysterectomy. Pedicle treated extra-peritoneally in the usual manner. The larger abdominal tumour proved to be a subperitoneal pedunculated growth which had become cystic. It contained twenty ounces of dark blood-stained fluid, and here and there adhering to its wall was a large quantity of disorganised blood-clot. The pedicle of this tumour, which was of about one inch in diameter, arose from the posterior wall of the uterus close to the left Fallopian tube. It was oedematous, and so friable that it broke down readily under the pressure of the fingers after removal. The uterus contained several small tumours in its substance, and two more predunculated subperitoneal growths in an oedematous state were found in the pelvis, arising one from the anterior and the other from the posterior wall of the uterus, low down and towards the right border.

CASE 2. True hæmorrhagic cyst developing in an enormously and uniformly enlarged uterus after the menopause; hysterectomy.—Annie L—, aged 60, and married thirty-five .

years, has never been pregnant. She ceased menstruating four years ago. About the age of forty she began to notice some enlargement of the abdomen, and gradually thereafter it appeared to increase in size until six months ago, when she began to complain of pain in the right side, and simultaneously she remarked that her abdomen was rapidly increasing in size. Pain in the right side has been constantly experienced for six months, and during this time the abdomen has become greatly distended.

The abdomen, which is enormously enlarged, is occupied by a tumour which is more prominent on the right than on the left side. On the right side it extends from the pelvis to four inches above the level of the umbilicus, but on the left it falls short of this height by two inches. This tumour is composed of two portions, a right and a left. The right portion is fluctuant, but the left is quite solid.

The cervix, which is flush with the vaginal roof, is located high in the pelvis, and it is evident, when the abdominal tumour is moved, that it is continuous with what remains of the cervix.

The tumour was removed by abdominal section, and the pedicle was dealt with

extra-peritoneally, but the patient never rallied from the operation, and died fourteen hours afterwards. The uterus had been universally transformed into an enormous fibroid growth. In the right and upper portion was a sanguineous cyst, which contained nearly thirty ounces of dark liquid blood, and no clots. This cyst possessed a distinct lining membrane, and the tumour otherwise was healthy throughout.

CASE 3. A pedunculated subperitoneal cyst developing after the menopause in consequence of retrograde change in an adenoid growth arising from the uterus; removal by ligature; recovery. — Elizabeth S—, aged 58, and married twenty-eight years, has had five children; the last child was born fourteen years ago. Menstruation ceased at the age of fifty-two. Nine years ago patient observed a small swelling, but after the menopause it seemed to vanish. Two years ago a swelling reappeared in the situation of the former swelling, and somewhat rapidly it has increased in size. It is slightly painful.

The abdomen is occupied by a tense globular and fluctuant tumour which extends from the pubes to a short distance above the umbilicus. The cervix uteri, which is small,

is located centrally. The abdominal tumour appears to be continuous with the cervix.

The cyst, which was attached to the posterior wall of the uterus, contained thirty ounces of fluid. The pedicle was ligatured without being transfixed, and the tumour was then excised.

CHAPTER VI

MALIGNANT DISEASE OF THE BODY OF THE
UTERUS

SARCOMA and the soft variety of cancer may so develop in the body of the uterus as to produce an abdominal tumour. The disease may originate in the mucous lining and form a more or less polypoid growth, or it may arise in the muscular substance and transform eventually the body of the uterus into a malignant mass. In the latter case the tumour grows as a rule somewhat rapidly, and may attain an enormous size ; but in the former the disease proceeds usually more slowly, and it seldom happens that the cavity of the uterus becomes so distended as to form a large abdominal tumour, as the new growth, whether it be sarcomatous or carcinomatous, is invariably soft, and shows a marked disposition to break down.

The disease which appears in the uterine wall may be evolved at any age, whilst that which attacks the mucous lining is rarely observed until after the menopause.

When the cavity of the uterus becomes distended by malignant growth, the resulting abdominal tumour occupies usually a more or less central position, and the same may be remarked when the body of the uterus generally is infected ; in the latter case, however, and especially at an early stage of the disease, the tumour is often found in one or the other iliac region. The tumour which is formed by an infiltration of the uterine wall is at first hard or semi-cystic, but sooner or later it becomes almost fluctuant ; whilst that which results from the presence of an intra-uterine growth is commonly somewhat soft. When the disease originates in the substance of the uterus, the intestines may become more or less extensively adherent to the degenerate organ and the abdominal wall, and eventually fistulous openings into the gut may be established.

Symptoms.—This disease develops as a rule very insidiously, and produces no characteristic symptoms. Sometimes there is observed a watery and even a haemorrhagic discharge, and occasionally the pain complained of is most severe, although usually it is slight.

Treatment.—If the disease has originated in the mucous lining, and it is evident that

it has not extended to the peritoneal covering, hysterectomy may be advised; when, however, the disease is virtually a cancerous degeneration of the body of the uterus, no operation is feasible.

The following six cases are good examples of cancerous degeneration and cancerous distension of the body of the uterus.

CASE 1. Medullary cancer of the body of the uterus at the age of thirty-five; amenorrhœa greater part of time; autopsy.—Grace G—, aged 35, and married five years, has had no children, but three miscarriages. The last miscarriage took place in October, 1886. The patient came under my observation on December 4th, 1887, and the following is the history which was then obtained. For six months there has been no recurrence of menstruation. During the last two months she has complained more or less of severe pain all over the lower abdomen, but especially in the left iliac region. There is no disturbance of the bladder.

Physical signs.—The lower abdomen is occupied by a swelling which rises out of the pelvis, and extends more especially into the left iliac region. It measures transversely three inches, and its upper border is located

two inches above Poupart's ligament. The cervix uteri, which is soft and apparently healthy, is deviated slightly towards the left wall of the pelvis. The vaginal roof is occupied by a hard mass which is the enlarged body of the uterus, and is continuous with the abdominal swelling noted in the left iliac region. The body of the uterus is rather fixed, and is evidently a solid tumour.

The abdominal swelling gradually extended into the right iliac region, and reached by the time of death to the umbilicus. It was irregular and of varying consistence, being especially firm at the periphery, and almost fluctuant in the centre.

After being under observation five months this patient died from exhaustion on April 27th, 1888. Throughout the evolution of this disease there was complete amenorrhœa, and no vaginal discharge was noted until two months before death, when a very offensive discharge made its appearance and continued to flow profusely until the end. The temperature varied from 99° F. in the morning to 100° F. and sometimes 102° F. in the evening. The pain was most distressing, and was only relieved by very large doses of morphia. No trouble with the bladder was ever experienced.

Autopsy.—The abdomen was occupied by a large and somewhat diffuent mass which filled more or less completely the pelvis, and reached to the level of the umbilicus. The anterior surface of the tumour was extensively adherent to the parietal peritoneum. The bladder was not only free from invasion, but from adhesion. The tumour was smooth on the left side, but on the right several projecting nodules were observed. The cervix was free from disease. It was patent, and allowed the index finger to penetrate the anterior wall of the uterus, which was extensively diseased and almost diffuent. The body of the uterus had been transformed entirely. The ovaries could not be detected. A small cyst, which was no doubt ovarian, was found in Douglas's pouch adherent to the posterior surface of the uterine tumour. The lumbar and pelvic glands were all enlarged and infiltrated with disease. There was no free fluid in the abdomen. All the intestines lying on the tumour were firmly adherent to it. The other organs of the body were healthy; no secondary deposits were detected anywhere except in the glands. A portion of the uterine tumour was examined microscopically by Dr. Dalton, and pronounced to be medullary cancer.

Reckoning from the date of the initial amenorrhœa, the disease in this case proved fatal in eleven months.

CASE 2. Medullary cancer of the substance of the uterus at the age of thirty-six; menstruation undisturbed until five months before death, when amenorrhœa was remarked; autopsy.—Maria C—, aged 36, and married five years, has had one child, but no miscarriage. The child was born four years ago. This patient came under my observation on September 27th, 1888, and died on June 15th, 1889. When first seen she stated that menstruation was regular, but for three months now she has complained of a dragging pain in the lower abdomen and of pain in the back for two or three days before becoming “unwell.” Three months ago (in July, 1888) she detected a small swelling in the left iliac region, and this has gradually got bigger. For three weeks she has complained occasionally of pain about this lump. There is no bladder nor rectal trouble.

Physical signs.—A small, markedly projecting tumour—which makes the abdominal wall stand out prominently—is detected in the left iliac region. It reaches almost to the level of the umbilicus, and recedes some-

what from the abdominal wall on the right side. It appears to be solid. The cervix uteri, which is healthy, is deviated towards the left wall of the pelvis. The vaginal mucous membrane to the right of the cervix is eroded to the extent of a half-crown piece, and occupying this breach is felt a convoluted mass. The cervix is quite distinct from this eroded spot. The projecting tumour noted abdominally is the uterus, which is riding upon and is intimately incorporated with a swelling which is lodged in the posterior half of the pelvis, and is continuous with the convoluted mass detected in the vagina.

This patient continued to menstruate regularly and as usual until January, 1889, but thereafter amenorrhœa was observed. On October 16th, 1888, vaginal discharge was noted, but it never troubled the patient until December 17th, when it became offensive, profuse, and watery. The tumour gradually increased in size, and at the time of death it filled completely the abdominal cavity, which was enormously distended. Four weeks before death the umbilicus and the skin around it became inflamed, and soon thereafter a large quantity of sero-sanguinolent fluid was discharged daily from a small ulcer in the

umbilicus. This discharge soon became fæculent in odour, and for four days before death fæcal matter was extruded by this fistulous opening at the umbilicus.

Autopsy.—The tumour was extensively adherent to the anterior abdominal wall, and so diffluent that it actually flowed from the incision in the abdominal wall. There was hardly a trace of uterine tissue except close to the cervix, which was apparently healthy. The ovaries could not be detected, and the intestines were extensively adherent to the growth. No secondary deposits were found in the liver or lungs.

CASE 3. Cancerous degeneration of the body of the uterus occurring after the menopause.—Elizabeth D—, aged 59 and single, came under my observation on December 13th, 1890. She had ceased menstruating at the age of fifty-four. Fourteen days before coming under my care patient was suddenly deluged by a watery discharge which flowed from the vagina, and this discharge has continued to flow more or less ever since. She has complained of a little pain in the lower abdomen.

Physical signs.—The abdomen is occupied by a globular swelling which extends from

the pelvis to five inches above the umbilicus. The tumour is soft and elastic, but can hardly be said to be fluctuant. The vaginal roof is drawn up like a cone. The cervix as such cannot be felt, but occupying the apex of the cone is felt a projecting nodule. The tumour gradually increased in size, and the patient died from exhaustion on April 7th, 1891.

Autopsy.—The abdominal cavity contained no fluid, and there was no evidence of peritonitis. On the surface of the greatly enlarged uterus were detected here and there small white shining nodules. The centre of the uterus was diffused. There were no secondary deposits. Sections of the uterus revealed microscopically the characteristic appearances of cancer.

CASE 4. Abdominal tumour formed by a sarcomatous growth which had originated in the mucous membrane, distending the cavity of the uterus.—Elizabeth H—, aged 48, and a widow, has had five children. She ceased menstruating three years ago. For five months she had noticed a watery discharge from the vagina, and during the last two months this discharge had become much increased, and occasionally it was blood-stained.

Three months ago she remarked that her abdomen was increasing in size. She has never experienced any pain.

Physical signs.—The abdomen is occupied by a central tumour which is somewhat bipartite. It extends from the pubes to close upon the umbilicus, and is rather firm in consistence. The os uteri is slightly open, and the abdominal tumour is the enlarged body of the uterus. On passing the finger through the os uteri it impinges against a smooth softish mass which occupies the cavity of the uterus.

The cervical canal was dilated, and the intra-uterine growth, which was very soft, was scooped out; and during this operation there was no haemorrhage of any account. The growth when examined was a mixed sarcoma.

The uterus rapidly became distended again by the neoplasm, and the patient died from exhaustion five months after the operation. No post-mortem examination was obtained.

CASE 5. Adeno-sarcoma of the lining membrane of the uterus; calcareous fibroid nodules in the uterine wall.—May M—, aged 53, and single, ceased menstruating five years ago. For twelve months patient has complained

more or less of a slight hæmorrhagic discharge from the vagina and of pain—which, however, has never been severe—in the lower abdomen.

Physical signs.—The abdomen is occupied by a small swelling which rises out of the pelvis, and extends to two inches above the pubes. The cervix uteri is central and healthy. The posterior wall of the uterus has a lobulated feel. The abdominal tumour is the enlarged uterus.

The abdomen gradually became distended with fluid, and the patient died three months after being first seen.

Autopsy.—The peritoneum was filled with a sero-sanguinolent fluid. The omentum, which was extensively infiltrated by malignant growth, was adherent to the anterior abdominal wall in the neighbourhood of the umbilicus. In the wall of the uterus, which was of about the size of a three months' pregnancy, were three calcareous nodules, evidently old fibroid growths. The cavity of the uterus was occupied by a pedunculated and lobulated growth which was breaking down.

The intra-uterine tumour proved under the microscope to be an adeno-sarcoma.

CASE 6. *A columnar epithelial growth occupying the cavity of the uterus and producing thereby an abdominal tumour.*—Bertha B., aged 57, and single, ceased menstruating ten years ago. For eighteen months she has observed a vaginal discharge, which has gradually become more and more tinged with blood. For one month she has complained of pain in the lower abdomen.

Physical signs.—Rising out of the pelvis and just felt above the pubes is a small rounded swelling. By vaginal examination this swelling was found to be the body of the uterus enlarged.

Fourteen days after being seen this patient died in a state of collapse.

Autopsy.—The peritoneal cavity contained faecal matter which had been extravasated from a cancerous ulcer in the sigmoid. The body of the uterus, which was soft, was of about the size of a two months' pregnancy. The cavity of this organ was occupied by a cauliflower-looking growth which had originated in the posterior wall. Sections of the intra-uterine mass displayed the characters of a columnar epithelioma.

CHAPTER VII

HÆMATOMETRA AND HYDROMETRA

Hæmatometra

IN the case of some of the lower animals, such as the Talpidæ, the vaginal canal is in the virgin state completely closed by a membranous diaphragm, and occasionally this condition obtains in the human female, although usually the hymen exists as an incomplete diaphragm, and permits of the escape of the menstrual discharge when the function of menstruation is established. The hymen, which is, so to speak, imperforate, may escape detection until puberty is attained —until, in fact, the vagina and uterus too, it may be, have become more or less distended by the pent-up menstrual fluid. In this manner, and in consequence of an occlusion of the cervical canal alone, an abdominal tumour may be produced.

The tumour which is thus formed rises out of the pelvis, and occupies as a rule

a more or less central position. It is usually of a globular shape and fluctuant.

On examining the external genitals it will be remarked that the vaginal canal is completely occluded, and that the hymen bulges somewhat externally and presents a bluish appearance.

This condition is associated with a history of amenorrhœa, and usually of periodic attacks of pain or discomfort in the loins and abdomen. Retention of urine may supervene.

Treatment.—A small opening should be made in the hymen, and after the bulk of the fluid has escaped this opening should be enlarged. With care the vagina should be washed out with a weak solution of carbolic, and the margins of the wound, either before or after the use of the douche, may be touched with a stick of nitrate of silver.

Hydrometra

After the menopause more especially, and in consequence of the occlusion of the cervical canal, the uterus may become distended by fluid which has been secreted by the glands and lining membrane of the organ. In this manner an abdominal tumour may be produced which would present the characters of a cyst. I have seen one case only of

hydrometra, or rather pyometra, as the fluid was slightly purulent. In this case, however, the uterus contained not more than an ounce of fluid, and consequently no abdominal tumour was observed. The condition was discovered accidentally when the cervix, which was elongated and protruded beyond the external genitals, in association with a certain amount of prolapse, was amputated. The presence of the fluid had produced no symptoms.

Treatment.—If it is probable that the occlusion is at or about the os externum the tip of the cervix should be amputated. If this fails the fluid may thereafter be reached by carefully making a passage through the centre of the cervix.

CHAPTER VIII

EXTRA-UTERINE PREGNANCY

OVARIAN gestation occurs naturally in some of the lower animals, and although some authorities deny the possibility of its occurrence in the human female, I have nevertheless seen one well-marked example of this variety of ectopic pregnancy. In this case the Fallopian tube, which was perfectly intact, was removed with the sac in which the foetus had developed, the broad ligament having been transfixed as in ovariotomy. When, however, a fecundated ovum develops outside the uterus it usually does so, at least primarily, in the Fallopian tube; but it may escape sooner or later from this structure either by the fimbriated extremity or by actual rupture. At any period of its existence the embryo may die, and the tumour which it had formed may consequently never rise sufficiently out of the pelvis to constitute an abdominal tumour. As I have never had an opportunity of observing the gradual growth

of an ectopic pregnancy, I cannot say at what period in its development it becomes an abdominal tumour, but I am disposed to believe it will attain this distinction later than a natural pregnancy.

The symptoms associated with an ectopic gestation differ in no respect from those which may be observed during the evolution of an uterine pregnancy, and the mammary changes are the same in the two cases. The extra-uterine tumour may occupy a more lateral position, but the physical signs by which it is characterised abdominally are essentially the same as those which we recognise as belonging to the pregnant uterus. The cervix uteri may be more or less soft and patulous, too, as in *utero-gestation*; but with care it may be possible to differentiate the body of the uterus—which is often slightly enlarged under such circumstances—from the tumour which contains the product of conception.

If a certain diagnosis is arrived at whilst the child is still living, gestation should be allowed to proceed if possible until the ninth month, and then the child should be delivered by abdominal section, but no attempt should at the same time be made to separate the placenta. When, however, it is evident that

the foetus is dead, the sooner it is removed the better, and we must at the time of operating decide whether it is advisable or not to interfere under such circumstances with the placenta.

The following three cases are good examples of ectopic pregnancy in which the foetus had arrived at maturity, but had died before the patients came under my observation.

CASE 1. *Extra-uterine foetation in right broad ligament, with slight haemorrhage on three occasions during gestation.*—Elizabeth R—, aged 34, and married four years, has had one child. This child—born three years ago—was suckled for fourteen months, and was then weaned because the menstrual discharge had reappeared. Thereafter the monthly flow recurred regularly until April, 1892. On April 4th, 1892, patient menstruated as usual. She then missed one period, and during the last week in May she complained of pain of a labour-like character for two days, and simultaneously she remarked a slight hemorrhagic discharge from the vagina. The pain and hemorrhage after continuing for two days ceased. Towards the end of June there was again a slight dis-

charge of blood, but no pain. From June there was complete amenorrhœa until the last week in December, when there was again a slight "show." In January, February, and March, 1893, menstruation was in abeyance, but during the last week in April it again made its appearance, and patient continued to lose a little thereafter every day for one month. Four weeks later the menstrual discharge reappeared, and on this occasion it flowed for the usual number of days—four—and was evidently normal in every respect. Three days after the cessation of this discharge the patient came under my observation complaining solely of enlargement of the abdomen.

Physical signs.—The abdomen is occupied by a hard globular swelling, which extends more into the right than the left half of the cavity. It rises out of the pelvis, and reaches to three inches above the level of the umbilicus. Towards the extreme right the tumour appears to be solid. The cervix uteri is located high in the pelvis, and the body of the uterus, which is of about a normal size, is closely applied to the left side of a swelling which has invaded the right broad ligament and is continuous with the abdominal tumour.

By abdominal section a mature but dead female child was removed from the substance of the right broad ligament. The placenta, which was in a degenerate state, was separated without haemorrhage occurring. The sac was stitched to the abdominal wall and drained.

It is quite possible that in this case the right Fallopian tube, which contained the fecundated ovum in the first instance, ruptured towards the end of May, and that the foetus thereafter completed its development in the substance of the broad ligament. It is impossible to say when the child died, but at the time of the operation one was inclined to believe that it must have been dead at least two or three months.

CASE 2. Maturation of a foetus outside the uterus, and during the evolution of this pregnancy no unusual symptom was observed; subsequent uterine pregnancy and abortion.— Hannah M—, aged 33, and married nine years, has had five children and one miscarriage. The last child, born on the 2nd of May, 1888, was suckled for two years. The menstrual discharge reappeared after this confinement, when the child was fifteen months old, and it thereafter recurred re-

gularly until three months after weaning. No menstrual discharge appeared in July, 1890, nor was there again any semblance of menstruation until April, 1891, when a haemorrhagic discharge appeared, and continued to flow more or less constantly for eight weeks. Patient had considered herself pregnant, and had expected to be confined in March. She had never experienced any pain. She came under my observation on October 1st, 1891, and the temperature during the nine days preceding abdominal section, which was performed on October 10th, ranged from 100° F. to 102° F.

Physical signs.—The abdomen, which is much distended, is occupied by a central swelling which measures vertically thirteen inches, and extends from the pubes to four inches above the umbilicus. Over the tumour there is an obscure sense of fluctuation. The breasts present none of the characters of pregnancy. The cervix uteri is located rather towards the right wall of the pelvis. It is soft, and the os is patulous. No portion of the abdominal tumour is felt in the pelvis. The body of the uterus can with difficulty be defined in apposition with the right portion of the abdominal tumour.

The foetus and placenta were removed by

abdominal section. The fluid contained in the sac was of a purulent character.

On December 21st, 1892, this patient again came under my observation, as she had missed being unwell in November. She was then pregnant, but miscarried on March 15th.

CASE 3. *Extra-uterine pregnancy with hæmorrhage from the uterus from the sixth to the seventeenth week of gestation.*—Clara M—, aged 37, and married sixteen years, has had five children. The last child was born nearly twelve years ago. On April 9th, 1890, this patient came under my care, and the following history was then obtained. She missed one “period” in January, 1889. In the early part of February a hæmorrhagic discharge from the vagina was observed, and this continued to flow more or less freely every day for eleven weeks. From about the last week in May until Christmas there was complete amenorrhœa. On Christmas Day a hæmorrhagic discharge from the vagina was again observed, and it continued to flow until February 7th, 1890. From February 7th until April 9th there had again been amenorrhœa, and the patient, who had never experienced any pain, complained solely of an increase in the size of her abdomen.

Physical signs.—The abdomen is occupied by a swelling which fills more especially the left half of this cavity, and extends from the pelvis to four inches above the umbilicus. Fluctuation is obscure. No sounds are heard over the tumour, and nothing is to be noted about the breasts. The cervix uteri is soft and the os is patulous. The body of the uterus, slightly enlarged, is detected by bimanual examination to the right of the abdominal tumour. A portion of the abdominal tumour is felt in the pelvis to the left of the uterus, and a large solid body is felt *per vaginam* in the interior of the tumour.

By abdominal section the foetus (which had evidently been dead some time) and placenta were removed. The fluid contained in the sac was of a dirty purulent character.

CHAPTER IX

CYSTIC TUMOURS OF THE OVARY

THE serous membrane which envelops the ovary is reflected directly from this body to the posterior surface of the broad ligament, and a mesovarium is thus as a rule formed. When, therefore, the ovary becomes transformed into a tumour it grows commonly towards the peritoneal cavity, and the mesovarium constitutes its pedicle. Occasionally, however, the tumour burrows into the substance of the broad ligament, and under such circumstances no pedicle is found.

At any period of life—before the establishment of menstruation as well as during the evolution and after the cessation of this phenomenon—cysts may arise in the ovary and produce an abdominal tumour.

The following varieties may be observed :

1. The compound ordinary cystoma.
2. The unilocular ordinary cystoma.
3. The dermoid cystoma.
4. The hæmorrhagic cystoma (true).
5. Abscess of the ovary.

1. *The compound ordinary cystoma.*—This is the commonest form, and the tumours belonging to this class may be regular or irregular, and may attain an enormous size. The cystic change is preceded by the conversion of the substance of the ovary into a glandular tissue. Throughout the organ thus transformed fluid of a serous, mucoid, or colloid nature begins to accumulate, and a cystoma is in this manner eventually produced. Neighbouring cysts as they grow may coalesce and form larger cavities. Whilst this process of extension is proceeding, blood-vessels, which are still pervious in the partition walls, may be opened into ; hence broken-down blood is often detected in one or more loculi of a compound cystoma. In many cases the colloid material which fills the spaces in a tumour of this kind is so thick and glutinous that the growth is practically solid ; or, again, the glandular tissue may be more or less extensively maintained in its pristine state, and the tumour may be more solid than cystic.

Cystomata of this class frequently contract adhesions with adjacent structures, and the peritoneal covering may, in consequence of a chronic inflammation, become greatly thickened, and undergo thereafter a fatty or cal-

careous degeneration. In association with these two latter changes, as I have elsewhere remarked (see "Abdominal Dropsy"), ascites is commonly observed. The solid material which exists in many of these tumours may also undergo fatty degeneration, and more or less constitutional disturbance may result therefrom. In one or more loculi papillomatous growths are sometimes found, and it occasionally happens that these penetrate the external wall of the cyst and cause the contents to be extravasated into the peritoneal cavity. When such an accident occurs the omentum, as a rule, becomes rapidly infiltrated with colloid material, and forms a distinct tumour, but the immediate result will depend upon the character of the contents of the ruptured sac. The papillomatous growths which are found in the interior of ovarian cysts are evidently not equally malignant. I have seen one case of epithelioma of the external covering. In a few rare cases the compound cystoma may contain a dermoid loculus.

The Rokitansky cyst is a rare variety of the multilocular cystoma. Both ovaries are, as a rule, similarly affected. The tumour, which is seldom large, is made up of a congeries of cysts, varying usually in size from

a pea to a grape. In one of the component cysts a stray ovum may have been found, but it cannot consequently be inferred that the tumour is caused by dropsy of the Graafian vesicles. The disease as it exists in the ovaries is similar to that which is occasionally observed in the kidneys.

2. *The unilocular ordinary cystoma.*—This variety of tumour originates in a remnant of the segmental duct, and causes as a rule atrophy of the ovary. Sometimes, however, the ovary thus encroached upon undergoes cystic degeneration, and the resulting tumour, although practically unilocular, may nevertheless present one or more small cysts as well. The unilocular cystoma may attain an enormous size, and the fluid which it contains is invariably thin. It is seldom irregular, and it is much less frequently the seat of papillomatous growths or degenerative changes than the compound cystoma. Like the latter, it may contract adhesions with adjacent structures, or grow into the substance of the broad ligament.

3. *The dermoid cystoma.*—This variety of tumour contains a sebaceous material which may be thin or very thick, and more or less hair is invariably present. The cyst wall is sometimes markedly and irregularly thick-

ened by plates of bone and teeth in its substance. Dermoid cysts are usually unilocular, but occasionally they are multilocular, and a loculus even of an ordinary compound cystoma may present the characters of a dermoid. Sometimes the cyst wall becomes the seat of malignant change.

4. *The hæmorrhagic cystoma.*—In consequence of recurring attacks of hæmorrhage into its substance the ovary may eventually become transformed into a unilocular and thin-walled cyst. The extravasated blood remains fluid, and the resulting tumour is seldom large. This is a rare variety of ovarian cystoma.

5. *Abscess of the ovary.*—The contents of an ovarian cyst of large dimensions may become more or less purulent, but true abscess of the ovary seldom results in the production of an abdominal tumour. In consequence of an attack of pelvic peritonitis, however, the ovary may become so fixed as to be felt abdominally, and abscess of the ovary may under such circumstances produce an abdominal tumour.

Symptoms.—The ordinary cystomata, compound and simple, may not only attain a large size, but may contract adhesions with adjacent structures without the patient complain-

ing of more than an increase in the size of the abdomen. In consequence, however, of intestinal adhesions or the extravasation of blood into the tumour more or less pain may be experienced, and may even be an early symptom. Pain is a common association of dermoid and hæmorrhagic cysts. One or both ovaries may be transformed into cystic tumours without the function of menstruation being deranged. Menorrhagia and amenorrhœa may, however, result, and dysmenorrhœa may be observed. Menorrhagia was the sole symptom in a case of Rokitansky cysts (both ovaries affected) which came under my notice. The tumours in this instance were confined to the pelvis. When ovarian cysts develop in women who, although well advanced in years, have never menstruated, a hæmorrhagic discharge of a more or less periodic character may be thereby induced. In the case of women who have reached the menopause a continuous hæmorrhagic discharge from the vagina is occasionally noted. The functions of the bladder are very rarely disturbed by the presence of an ovarian cyst. I have seen but one case in which retention of urine had resulted. Loss of flesh is often remarked, but this is seldom extreme unless the con-

tents of a tumour—usually the more solid variety—have begun to degenerate.

Physical signs.—From a variety of causes these must necessarily vary. If the tumour is of an ordinary size its outline can be mapped out by percussion and palpation, and one or both flanks will be found resonant, unless there exists at the same time fluid in the peritoneum. One flank may be and often is dull, but this is not altered by changing the position of the patient. The greater portion of the tumour is, as a rule, located in one or the other half of the abdomen, but it may nevertheless occupy a more or less central position. It may be regular or irregular in outline, and it is usually somewhat moveable. Fluctuation may or may not be detectable. The ease or difficulty experienced in eliciting this sign will depend upon the character of the fluid, and upon the paucity or abundance of intervening septa. The thinner the fluid and the fewer the loculi, the more readily will fluctuation be elicited. By bimanual examination we may be able to satisfy ourselves that the tumour has originated in the pelvis, and is distinct from the uterus. In a few rare cases, however, the tumour may at an early stage of its existence have become adherent

to the uterus, and this organ may consequently, as the cyst increased in size, have become elongated and attenuated. When the uterus is thus incorporated with an ovarian cystoma some difficulty in diagnosis may be experienced. I have seen two cases of this kind in which eminent gynaecologists, relying upon the measurement of the uterine cavity as evidenced by the sound, erred in diagnosis. An ovarian cyst may grow into the substance of the broad ligament, and the uterus may thereby be dragged more and more out of the pelvis into the abdominal cavity. Under such circumstances, however, the uterus *per se* can usually be defined by bimanual examination. When the cyst is dermoid, hard, and even bony portions of the tumour may be detected in the pelvis.

An ovarian cyst which is largely unilocular may attain a great size, and fill more or less completely the abdominal cavity. Under such circumstances the physical signs may resemble somewhat those of ascites. If there is resonance, however, it will be in one or both flanks or in the epigastrium, and the tympanitic areas will not be altered materially by changing the position of the patient. The umbilicus may bulge in ascites, and also in consequence of the presence of encysted fluid.

Free fluid in the peritoneum, it should be remembered (see "Abdominal Dropsy"), may co-exist with cystomata of the ovary. In ascites the intestines may, on account of the shortness of the mesentery, be prevented from floating on the surface of the fluid, and tympanitic resonance may be detected in one or even both flanks by reason of some adhesions to the gut.

Treatment.—The tumour should be removed by abdominal section.

To illustrate the various facts concerning ovarian cystomata, the following cases have been selected :

CASE 1. Typical ovarian cyst largely unilocular, left side; ovariotomy; recovery.—Emily S—, aged 33, and married nine years, has had one child. The child was born seven and a half years ago, and the subsequent sterility is designed. Menstruation recurs regularly, and as usual. For two years patient has remarked that the abdomen was increasing in size. The enlargement has never been referred more especially to one side.

The abdomen is prominent. It is occupied by a swelling which is located somewhat centrally, but extends further into the left

than the right flank. It reaches from the pubes to two inches above the umbilicus. Fluctuation is well marked. The right flank is resonant, and the left is rather dull. The cervix uteri is located fairly centrally. The body of the uterus is directed towards the right side. No portion of the cyst could be detected in the pelvis.

CASE 2. Large unilocular cyst of right ovary adherent to the anterior abdominal wall; no resonance elicited; ovariotomy; recovery.—Mary J.—, aged 42, and married fifteen years, has never been pregnant. Menstruation recurs as usual. Four years ago patient received a blow on the abdomen, and two months thereafter—having since the accident complained of pain in the belly—she remarked that her belly was increasing in size. She states that on three different occasions since the accident she has been tapped, and on the last occasion, one month before coming under my observation, twenty pints of fluid were drawn off.

The abdomen is enormously distended. Resonance can nowhere be elicited, and the percussion note is not altered by any change in the position of the patient. Fluctuation is quite distinct. The pelvic examination is

unimportant. There is no œdema of the legs.

Ovariotomy.—The tumour, which was a unilocular cyst of the right ovary, was adherent to the abdominal wall anteriorly from two inches above the pubes to four inches above the umbilicus.

CASE 3. *Multilocular cyst of left ovary; extensive adhesions to omentum and gut; pain an early symptom; ovariotomy; recovery.*—Emma R—, aged 47, and married thirty years, has had fifteen children. The last child was born five and a half years ago. Menstruation recurs as usual.

Eighteen months ago patient was awaked one night with severe pain in the abdomen, which was accompanied with sickness. At varying intervals of fourteen to twenty-eight days patient has since the first attack experienced similar attacks. Three months after the first attack a lump was detected in the right iliac region, and gradually it has increased in size. For five months the pain has been much less severe, and it has seldom been accompanied by sickness.

The abdomen is occupied by an irregular swelling, which extends obliquely from the right iliac to the left lumbar region. The

swelling is composed of two main masses, a right or lower, and a left or upper. Towards the right upper border of the swelling are felt several small projecting cystic nodules. The cervix uteri is located fairly centrally; the os looks downwards. No portion of the abdominal tumour can be felt in the pelvis. Moving the abdominal tumour drags the left broad ligament.

Operation.—The tumour, an irregular multicystic growth of the left ovary, was removed by abdominal section after thirty or forty adhesions to the abdominal wall, omentum, and gut had been ligatured. Before operation the temperature had reached 101° F., but after it never registered above 100° F. The patient made a good recovery.

CASE 4. *Multilocular cyst of left ovary in a patient aged twenty-nine, causing amenorrhœa.*—Elizabeth M—, aged 29 and single, had menstruated regularly until six months ago. For six months she has observed that the abdomen has been increasing in size, and during this same period the menstrual function has been in abeyance.

The abdomen is occupied by a swelling, which is located more especially in the left half of this cavity, and extends to the level

of the umbilicus. The left portion of the tumour appears to be solid, but the right is cystic. The cervix is directed towards the left side of the pelvis, and the body of the uterus distinct from the tumour is directed towards the right side. A portion of the abdominal tumour is felt to the left and in front of the cervix.

Operation.—The tumour, a multilocular cyst of the left ovary, contained much broken-down blood and blood-clot. There were no adhesions. Patient was able to be up three weeks after the operation.

CASE 5. Multilocular ovarian cyst growing into the left broad ligament; menorrhagia; removal of tumour by abdominal section; recovery.—Ann R—, aged 35 and married fifteen years, has had three children. The last child was born eleven years ago. Until ten months ago menstruation had recurred regularly and as usual. For six weeks there has been a constant haemorrhagic discharge from the vagina, and prior to this the menstrual discharge had recurred every ten days, after continuing for fourteen days during a period of eight and a half months. For six months patient has remarked that the abdomen was increasing in size.

The abdomen is occupied by a large and uniform swelling, which is located centrally and extends from the pubes to four inches above the umbilicus. Fluctuation is readily elicited. The right flank is resonant, whilst the left is dull. The vaginal roof on the left side is pushed down by a swelling which is continuous with the abdominal tumour. The cervix is located high in the pelvis, and the whole uterus is in close apposition with the right portion of the abdomino-pelvic swelling on the left side.

Operation.—The tumour, a multilocular cyst of the left ovary, was practically dug out of the left broad ligament.

CASE 6. Adeno-cystoma of right ovary incorporated with and causing the uterus to become elongated and attenuated; operation; death.

—Betsy H—, aged 56 and married thirty years, has had four children. She ceased menstruating seven years ago. For four years she has remarked that her abdomen has been increasing in size, and during this same period she has complained occasionally of sharp shooting pain, in the right iliac and hypogastric regions more especially.

The abdomen is occupied by a central and

slightly irregular tumour which extends from the pelvis to three inches above the umbilicus. The tumour is partially cystic. The cervix uteri, located centrally, is low in the pelvis. The abdominal tumour is continuous with the uterus.

Operation.—The tumour, an adeno-cystoma of the right ovary, was firmly adherent to the posterior surface of the uterus. The uterus was elongated and attenuated; the fundus reached the level of the umbilicus almost. As it was impossible to strip the tumour of the ovary from the uterus, the common pedicle was dealt with extra-peritoneally. There were many adhesions, and those in the pelvis were extremely firm.

CASE 7. *Ovarian cyst; colostrum in both breasts; ovariotomy; recovery.*—Alice H—, aged 30, and married eight years, has had three children and one miscarriage. The last child, born eighteen months ago, was suckled ten months. One month after weaning the menstrual discharge reappeared, and it has since recurred every three instead of every four weeks, and its amount has been excessive. Three months ago patient was seized with severe pain in the right half of the abdomen, which confined her to bed for

one month. The pain is still complained of, but is less severe.

The abdomen was found to be occupied by a small central and globular swelling, which extended from the pubes to three quarters of an inch from the umbilicus. It was cystic, and was more prominent on the right than on the left side. The cervix uteri, which was central, was located far back in the hollow of the sacrum. In front of the cervix, and pushing down the vaginal roof, is felt a swelling, which is continuous with the abdominal swelling. The tumour is distinct from the uterus. There is colostrum in both breasts.

Operation.—The tumour was removed by abdominal section. It was a cyst of the right ovary, and the fluid contained therein was of a dark green colour—broken-down blood.

CASE 8. *Dermoid of right ovary; haemorrhage into peritoneum in consequence of twist of pedicle; urgent symptoms; operation; recovery.*—Francis S—, aged 29, and married five years, has had three children. The last child, born eighteen months ago, was suckled twelve months. The menstrual discharge reappeared when the child was ten

months old, and it has recurred regularly; but during the last five months its amount has been excessive. For five months patient has complained of pain during menstruation, and for three weeks she has experienced pain more or less constantly in the lower abdomen, but especially in the right iliac region.

Palpation reveals a small cystic (?) swelling in the right iliac region, which is rather tender to the touch. Lying on the pelvic floor, in front and to the right of the cervix uteri, is felt a swelling, which is continuous with the abdominal swelling. The tumour is distinct from the uterus.

Three weeks after the foregoing signs were observed patient had a rigor, and she experienced recurring attacks of severe pain in the tumour, which were accompanied with sickness. The abdominal tumour increased in size and became more tender, and simultaneously the frequency of the pulse was increased.

Operation.—On opening the abdominal cavity the tumour, which was a cyst of the right ovary, presented a dark bluish appearance. The right Fallopian tube was intimately incorporated with the tumour, and was found coursing its anterior surface

transversely. The fimbriated extremity of the tube was much swollen, and it stood out prominently from the new growth. Recent blood and blood-clot was found in the peritoneal cavity, and this had in consequence of the intense congestion exuded from the free end of the Fallopian tube. A small blood-clot was adherent to the fimbriæ of the tube. The pedicle was the seat of a double twist. It was extremely friable, and the vessels traversing it were filled with recent thrombi. The cyst contained sebaceous material and hair, but no blood. The cyst wall was swollen and congested, and it could be separated with the greatest ease from its peritoneal covering.

CASE 9. *Ovarian cyst in a woman aged thirty-five, who had never menstruated until probably the cystic change had begun in the ovary ; ovariotomy ; recovery.*—Ellen M—, aged 35, and married fifteen years, has never been pregnant, and until eighteen months ago patient had never menstruated. Eighteen months ago a hæmorrhagic discharge from the vagina was observed. It lasted four days, and for twelve months thereafter it recurred for the same number of days every fourteen days. During the

last six months there has been noted constantly a haemorrhagic discharge. Eleven months ago patient remarked that her abdomen was increasing in size, and simultaneously she began to complain of pain in the lower abdomen, but especially in the left side.

The abdomen is occupied by a central and globular swelling, which extends from the pubes to four inches above the umbilicus. Fluctuation is distinct. The cervix uteri is central, and the abdominal tumour is not connected with the uterus.

Operation.—The tumour was a multilocular cyst of the left ovary. It contained much broken-down blood-clot.

CASE 10. Hæmatoma of the right ovary in a woman aged twenty, who had never menstruated; operation; recovery.—Kate P—, aged 20 and single, has never menstruated. Since the age of thirteen patient has every four weeks complained of severe pain in the lower abdomen, which has continued for from three to seven days. Lately the pain has become most intense.

In the right iliac region, at a spot two inches above Poupart's ligament, is felt the summit of a small swelling, which rises out

of the pelvis. The cervix uteri is directed towards the right side of the pelvis, and in front of it the vaginal roof is pushed slightly down by a globular swelling, which is continuous with the right iliac tumour. It is cystic.

Operation.—The cyst, which was thin-walled and of the right ovary, presented a bluish appearance. It contained dark fluid blood.

CASE 11. Abscess of the right ovary with menorrhagia; operation; recovery.—Elizabeth J—, aged 28, and married eight years, has never been pregnant. Ever since marriage patient has complained more or less of pain in the right iliac region, but during the last twelve months it has become more severe, and a marked increase in the menstrual discharge has during this same period been noted.

In the right iliac region is felt a small swelling of a globular shape, which rises out of the pelvis and reaches to two inches above Poupart's ligament. The cervix uteri is located rather towards the left wall of the pelvis, and the vaginal roof on the right side is pushed down by a swelling which is continuous with the iliac swelling. This tumour

is cystic, and is somewhat extensively adherent to the pelvic floor. It is distinct from the uterus. The temperature is normal.

The tumour was removed with difficulty by abdominal section. It was an abscess of the right ovary. The right Fallopian tube was removed at the same time; it was of the size of one's index finger, and its canal was distended with a dirty sero-sanguinous fluid. The left ovary and tube were firmly bound down by adhesions.

CHAPTER X

SOLID SIMPLE TUMOURS OF THE OVARY

SOLID simple tumours of the ovary are rarely seen. Two varieties—the adenomata and the fibromata—may, however, be observed. Like the cystomata, these tumours are usually pedunculated, but they may grow into the substance of the broad ligament. The adenomata are prone to undergo cystic and fatty degeneration, whereas the fibromata maintain, as a rule, their pristine state. At any age apparently these tumours may develop.

Physical signs.—The solid simple tumours of the ovary may occupy a lateral or a more or less central position in the abdomen. The fibromata are invariably regular, but the adenomata may be regular or irregular in outline. The consistence of the former is always firmer than that of the latter. In consequence of an inflammatory thickening or degenerative change in the peritoneal cover-

ing of a solid simple tumour ascites may develop. (See "Abdominal Dropsy.")

Symptoms.—The symptoms are similar to those of ovarian cystomata.

Treatment.—Removal by abdominal section.

The two following cases are good examples of solid simple tumours of the ovary.

CASE 1. *Degenerate adenoma ; great emaciation ; amenorrhœa ; operation ; recovery.*—Charlotte T—, aged 41 and married eleven years, has had four children and two miscarriages. The last child was born three years ago, and the last miscarriage—a three months pregnancy—occurred eighteen months ago. There has been no recurrence of menstruation for three months ; prior to this, patient had menstruated regularly and as usual. Seven months ago it was remarked that the abdomen was increasing in size. For five months she has complained of pain in the lower belly, and of "falling of the womb."

The patient is greatly emaciated, and she states that during the last three months she has lost flesh rapidly. There is no œdema of the legs. The abdomen is irregularly prominent. It is occupied by a firm central swelling which extends from the pubes to the

umbilicus. There is no evidence of ascitic fluid. The cervix uteri and vaginal roof are felt just within the entrance to the vagina. The cervix is pushed against the urethra, and posteriorly to it the pelvis is occupied by a globular and firm swelling which is continuous with the abdominal swelling. The body of the uterus cannot be defined. The temperature is 100° F.

Operation.—The tumour, which was a solid adenoma of the right ovary, was in a state of advanced fatty degeneration, but this change had not yet extended to the peritoneal covering. The gut was adherent to the neoplasm. Eight weeks after operation the patient weighed twelve pounds more than she did immediately before operation.

CASE 2. Fibroid of the ovary in a single woman aged twenty-one ; amenorrhœa ; operation ; recovery.—Kate P—, aged 21 and single, ceased menstruating four months ago. The patient sought advice on account of the amenorrhœa, but on examining the abdomen I detected a tumour which filled the lower portion of the belly. It extended from the pubes to two inches above the umbilicus. It was solid throughout. The cervix uteri, which was small, was located towards the

left side of the pelvis. No portion of the abdominal tumour could be felt in the pelvis. The tumour was evidently distinct from the uterus.

Operation.—The tumour, which was a fibroma of the left ovary, weighed ten pounds. It had contracted no adhesions.

CHAPTER XI

SOLID MALIGNANT TUMOURS OF THE OVARY

OF the solid tumours of the ovary—benign as well as malignant—cancer is, according to my experience, the most common, and sarcoma the most rare. In treating of the solid malignant tumours my description refers to epithelial cancer, as I have seen but one case of sarcoma of the ovary. The disease usually appears almost simultaneously in both organs, and it tends to infect rapidly the general peritoneum. Ascites is commonly but not invariably observed. Cancer of the ovary may probably develop at any period of life.

Physical signs.—The tumour occupies, as a rule, a more or less lateral position. It may be regular or irregular in outline, and its consistence is firm. It may, even when the peritoneum generally is infected, be fixed or mobile, and ascites may or may not be noted.

Symptoms.—Some pain is usually complained of, but this may never be severe.

Rapid loss of flesh is commonly remarked. In one of my cases a fistulous communication between the bowel and bladder was early established, and the character of the urine was what chiefly attracted the attention of the patient.

Treatment.—The peritoneum, it should be remembered, is early infected, and even under such circumstances there may be no evidence of ascites. The disease proves fatal as a rule in less than six months ; and if removal by abdominal section is to prove advantageous, it should be practised not later probably than the eighth week after the first symptom of the disease was noted.

The following cases are good examples of solid malignant tumours of the ovary :

CASE 1. *Epithelial cancer of both ovaries in a young married woman aged twenty ; no ascites ; death five months after parturition ; necropsy.*—Elizabeth J—, aged 20, and married eighteen months, has had one child. The child was born three months ago. During the last fourteen days patient has complained of pain in the lower abdomen. The right iliac region is occupied by a small swelling, which rises out of the pelvis and extends to two inches above Poupart's liga-

ment. The cervix uteri is located centrally. The vaginal roof, to the right of the cervix, is pushed down by a firm globular and moveable swelling, which is continuous with the abdominal tumour. To the left of the cervix is felt another small swelling, which is slightly irregular, and can with difficulty be got bimanually. This patient could not be induced to come into hospital, and for four weeks I lost sight of her. On account, however, of rapid loss of flesh, and the appearance of a lump in each iliac region, she again came under my care. The tumours were still moveable, but the condition of the patient was such that operative interference could not be advised. There was no evidence of fluid in the peritoneum. Three weeks later—five months after parturition—this patient died.

Necropsy.—There is no ascitic fluid. The peritoneum and pleuræ are studded with cancerous nodules. Both ovaries are transformed into malignant growths. The right is of the size of a large cocoa-nut, and the left is slightly smaller.

CASE 2. *Cancer of the right ovary; no ascites; death six months after parturition.*—Alice H—, aged 24, and married fifteen

months, has had one child. The child was born four months ago. About four weeks after parturition patient began to complain of shooting pain in the right iliac region, and soon thereafter she remarked that she was rapidly losing flesh. Fourteen days ago a "lump" was detected in the right iliac region, and since first observed it has greatly increased in size.

The abdomen is very distended—largely tympanitic. The right iliac region is occupied by a hard swelling, which rises out of the pelvis and extends to four and a half inches above Poupart's ligament. The abdominal wall covering the tumour is œdematosus. There is no evidence of ascitic fluid. The cervix uteri is closely applied to the right wall of the pelvis. In front of the cervix is felt a hard irregular mass, which is continuous with the iliac tumour.

This patient was emaciated to a high degree when she came under my notice, and she died three weeks later. No examination, however, was allowed.

CASE 3. *Solid epithelial cancer of both ovaries in a single woman aged thirty; ascites; death; necropsy.*—Mary C—, aged 30, and single, menstruated regularly till eight weeks

ago, but during the last six weeks there has been a constant haemorrhagic discharge from the vagina. For two months patient has complained of pain in the lower abdomen, and six weeks ago a swelling which has gradually increased in size was detected in the left iliac region.

The abdomen is distended and tense, although largely tympanitic. Both flanks are dull in consequence of the presence of ascitic fluid. A hard and fixed swelling is felt in the left iliac region. No vaginal examination was made, but by rectum a hard nodular swelling was detected in the left side of the pelvis, which was continuous with the abdominal swelling.

This patient became more and more emaciated, and died three months after the first symptom of the disease—pain—had been observed. There was never any oedema of the lower extremities. For seven days before death there was inveterate sickness.

Necropsy.—The abdomen contained some clear amber-coloured serum. Here and there the peritoneum was studded with small malignant nodules. The left ovary was adherent to the anterior abdominal wall. It was lobulated, and of the size of a foetal head. The left Fallopian tube was infiltrated

with cancer. The right ovary was in a similar condition to the left, but was much smaller. The uterus was adherent to both tumours. The disease was epithelial cancer.

CASE 4. *Cancer of the left ovary ; fistulous communication established between bowel and bladder ; death ; necropsy.*—Eliza T—, aged 43 and married fourteen years, has never been pregnant. For seven weeks there has been complete amenorrhœa, but prior to this menstruation had recurred regularly. Three months ago patient began to complain of pain in the lower abdomen, and especially in the left iliac region. For one month she has experienced pain in the vagina, and pain towards the end of emptying the bladder of its contents, which have for one month been faecal in appearance and odour. For one month patient has remarked that no motion is passed from the lower bowel unless an aperient is taken.

In the left iliac region is felt a soft globular swelling, which rises out of the pelvis and extends to two inches above Poupart's ligament. The cervix uteri is pushed rather towards the right wall of the pelvis. To the left and in front of the cervix is felt a hard globular swelling, which is fixed, but is pro-

bably continuous with the left iliac mass. The catheter drew off urine from the bladder, which was faecal in odour and appearance. After passing faecal matter by the urethra for nine weeks, or four and a half months after pain had been first experienced, this patient died.

Necropsy.—General peritonitis. Several cancerous nodules in peritoneum. The omentum covered the whole of the intestines, and was firmly adherent to a mass in the pelvis. On the left side a portion of the small gut was adherent to the pelvic mass. The pelvis was occupied by a swelling which had pushed the uterus towards the right wall of the pelvis. This mass was an inflammatory cavity containing faeces and the left ovary in a state of disintegration. It communicated with the bladder and with the sigmoid, and the opening into each of those structures was of about the size of a goose-quill. The walls of this sac were grey and pultaceous. The pedicle of the left ovary was still intact. The uterus was normal. The right ovary contained a small cancerous nodule of the size of a currant. Secondary nodules were found in the liver.

CASE 5. Sarcoma of the right ovary; no ascites; death; necropsy.—Lizzie R—, aged

35, and married ten years, has had three children. The last child was born four years ago. Menstruation had recurred regularly until four months ago, since which time there has been complete amenorrhœa. For four months she has complained of pain in the lower abdomen. The right iliac region was occupied by a swelling which rose out of the pelvis and extended to three inches above Poupart's ligament. The abdomen was slightly distended, but there was no evidence of free fluid in the peritoneum. The pelvis was filled by a mass which had displaced the uterus as a whole towards the right wall of the pelvis. For two months the patient had been losing flesh. There was no œdema of the lower extremities.

The tumour in the right iliac region increased rapidly in size and became fluctuant. The patient gradually became more and more emaciated, and died when the disease had probably been in existence nine months.

Necropsy.—There was no ascites and there were no secondary deposits. The right ovary filled almost completely the abdominal cavity. The uterus and left ovary appeared to be healthy. The tumour proved to be a round-celled sarcoma.

CHAPTER XII

TUMOURS OF AND IN THE BROAD LIGAMENT

Cysts of the Broad Ligament

The cysts of this group, which are invariably unilocular, arise independently of the ovary from some structure in or about the broad ligament. They need not grow in or into the substance of the broad ligament, and as a matter of fact they are often pedunculated. Cysts of the ovary may grow into the broad ligament, but these are not included in the present category.

Cysts of the broad ligament are by some authors called parovarian, under the belief that all these tumours originate in the parovarium, which is a remnant of the Wolffian body. I am, however, of opinion that they do not all arise from this structure, although they are all evidently developed from structures which have atrophied more or less completely.

The Wolffian body consists of glandular tubes which communicate primarily with the

body cavity on the one hand, and the segmental duct on the other. In the adult female various remnants of this foetal structure may be detected, but the most constant is that known as the parovarium or body of Rosenmüller, which is located in the substance of the broad ligament. The segmental duct becomes divided longitudinally into two parts, one of which continues attached to the segmental or glandular tubes, whilst the other constitutes the Müllerian duct or Fallopian tube. The middle portion of the Wolffian duct sometimes persists, and is known as Gaertner's canal, and I am convinced that some of the cysts found in the vagina originate in this foetal remnant.

Broad ligament cysts may appear either during the period of functional activity of the organs of generation, or after the cessation of menstruation. Frequently they grow with a distinct pedicle, but commonly they are embedded more or less in the substance of the broad ligament. The peritoneal covering, which is generally loosely attached to the proper cyst wall can, as a rule, be easily separated. The cyst wall is usually very thin. The contained fluid is generally clear like tap-water, or slightly opalescent, and possesses a specific gravity of about 1008.

It holds in solution albumen and chlorides. It is very rarely contaminated by blood. When the fluid is limpid it is probably re-absorbed sometimes, and the tension in the cyst may consequently vary from time to time.

Symptoms.—Frequently the patients suffering from cyst or cysts of the broad ligament complain solely of enlargement of the abdomen. Bearing-down pain is commonly observed, and menorrhagia or metrorrhagia is occasionally noted.

Physical signs.—As in the case of ovarian cystomata these tumours may occupy a central position ; but, developing as they do most frequently in the substance of the broad ligament, they occupy as a rule one half of the abdomen more than the other. Sometimes one cyst exists on each side. They are often very flaccid, and on this account no well-defined tumour may be detected ; the sensation may be merely an ill-defined fulness or resistance. They are usually globular, and being unilocular generally fluctuation is easily elicited when the cyst is tense. The uterus may or may not be pushed towards the pelvic wall away from the tumour, and a portion of the cyst may or may not be detected in the pelvis on the same side as that from which the tumour originates.

Treatment.—Tapping simply has been recommended, but removal by abdominal section is preferable, as papillomatous growths are sometimes found in the interior of such cysts. When embedded in the broad ligament they require to be shelled out, and this process is often tedious and attended with troublesome haemorrhage.

The following selected cases of cyst of the broad ligament are good examples of this variety of tumour.

CASE 1. *Interstitial cyst of the right broad ligament ; operation ; recovery.*—Elizabeth H—, aged 21 and single, has had one child. The child, born twelve months ago, was not suckled. Since the confinement menstruation has recurred as usual, but she has remarked that her abdomen has during the last twelve months increased gradually in size.

The abdomen is prominent. The percussion note is everywhere dull except in the epigastric region. Fluctuation is readily elicited. The cervix uteri is pushed rather towards the left wall of the pelvis. The vaginal roof to the right of the cervix is pushed down by an ill-defined and softish swelling, and underlying this fulness is felt a large artery.

Operation.—The cyst was shelled out of the right broad ligament. The fluid was slightly opalescent.

CASE 2. Pedunculated cyst of the left broad ligament; operation; recovery.—Sarah F—, aged 36, and married nine years, has had six children. The last child, born six months ago, was not suckled. Seven days ago the menstrual discharge reappeared for the first time since the confinement, and on this occasion she lost more than usual. Three months ago patient detected a lump in the centre of the abdomen, low down, and gradually it has increased in size.

The abdomen is occupied by a central and globular swelling, which rises out of the pelvis and extends to within one inch of the umbilicus. Fluctuation is well marked. The cervix uteri is located centrally, and in front of it the vaginal roof is pushed down by a globular swelling which is continuous with the abdominal tumour.

Operation.—The tumour was adherent to the omentum and to the anterior abdominal wall immediately above the pubes to the extent of about three square inches. The contents of the cyst were sero-sanguinolent. The left Fallopian tube ran along the upper

border of the cyst. The tumour and the left ovary had a common pedicle of about one inch in width and two inches in length. This pedicle was transfixated in the usual manner, and the tumour and ovary were removed *en masse*.

CASE 3. Interstitial cyst of the right, and pedunculated cyst of the left broad ligament; operation; recovery.—Louisa T—, aged 32, and married ten years, has never been pregnant. Menstruation recurs regularly, but during the last twelve months the discharge has been less in amount. For two years patient has complained of pain in the back, especially on the left side. Sometimes the pain is referred to the right half of the back.

The left side of the abdomen is more prominent than the right. The percussion note between the pubes and umbilicus is dull, and the dulness extends one inch to the right and four inches to the left of the linea alba. This area of dulness is apparently occupied by a flaccid cyst. The cervix uteri is located far back and towards the left wall of the pelvis. To the right of the cervix is felt a small, tense, cystic swelling, of about the size of a cocoa-nut.

Operation.—The abdominal fulness was

due to a pedunculated cyst of the left broad ligament, and the swelling detected vaginally to the right of the cervix was an interstitial cyst of the right broad ligament. The fluid contained in both cysts had a yellowish tint. The left ovary was removed with the left tumour.

This patient had never observed any increase in the size of the abdomen.

CASE 4. Pedunculated cyst of the right and of the left broad ligament; metrorrhagia; operation; recovery.—Henrietta M—, aged 24 and single, has menstruated irregularly ever since the establishment of this phenomenon, sometimes missing even for three months. During the last four months there has been a constant hæmorrhagic discharge from the vagina.

In the right iliac region is felt a small globular swelling, which rises out of the pelvis and reaches to within two inches of the umbilical level; it extends slightly to the left of the linea alba. This tumour is cystic. The cervix uteri, which is located centrally, is pushed towards the pubic bone, and behind the cervix Douglas's pouch is occupied by a small cyst, which is independent of the abdominal tumour.

The right cyst was removed with the ovary, and so also was the left. Both ovaries appeared to be healthy. The pedicle on the left side was extremely short.

Myomatous Tumours of the Broad Ligament

Solid tumours similar to those which grow from the uterus it is said may originate independently of the uterus in the substance of the broad ligament. No tumour of this kind has come under my observation, but the signs and symptoms would probably resemble those dependent upon a pedunculated fibroid of the uterus growing into the substance of the broad ligament.

Sarcoma of the Pelvic Bones

This is an exceedingly rare tumour. I have, however, seen one case. The subject of that growth was a woman aged fifty-four. For three months she had complained of pain in the left iliac region. The tumour, which occupied the left half of the abdomen, reached to the level of the umbilicus. It was firmly fixed to the left wall of the pelvis, and it pushed down the vaginal roof to the left of the cervix. Reckoning from the date on which the patient first experienced pain, this tumour proved fatal in five months.

Notes of the post-mortem.—The tumour was not in close apposition with the anterior abdominal wall. The left ovary, which was cystic but small in size, was pushed towards the right side, and so also was the sigmoid, which ran across the upper part of the tumour. The uterus was quite free from the growth. The tumour appeared to have started from the periosteum underlying the structure of the left broad ligament. It had separated the layers of this broad ligament, and grown upwards in the mesentery of the sigmoid.

CHAPTER XIII

ABDOMINAL TUMOURS CAUSED BY PELVIC
PERITONITIS

Abdominal Tumour caused by Pelvic Peritonitis without the Presence of Pus

PELVIC peritonitis is, in the female, an extremely common disorder, and occasionally it happens that without suppuration taking place the inflammatory process results in the production of a well-marked abdominal tumour. In the formation of such a tumour the uterus invariably participates more or less completely, and it is evident that the size of the tumour will, to some extent, depend upon the size of the uterus at the time of involvement. The inflammatory exudation may have involved a uterus which had already become greatly enlarged by the presence of one or more fibro-myomatous growths, or it may have been thrown out so rapidly after childbirth that the dissolutionary changes consequent upon parturition are for a greater

or less length of time arrested, and the bulk of the tumour is thereby correlative increased. In the majority of cases in which this condition of affairs obtains after delivery the exudation appears to be of a plastic nature, but occasionally, and especially when the inflammation develops independently of abortion or parturition, more or less serous fluid may be effused into small and confined spaces, and the resulting tumour, although apparently solid, is nevertheless in part cystic.

The symptoms complained of and the physical signs observed in cases of this description are those which belong to pelvic peritonitis generally.

The following cases were good examples of abdominal tumours produced by pelvic peritonitis, and without suppuration occurring.

CASE 1. *Perimetritis after childbirth.*—Clara J—, aged 25, and married five years, has had four children and no miscarriages. The last child was born nine weeks ago. For three weeks patient has observed a lump in the lower portion of the right half of the belly. Ever since the confinement she has complained more or less of pain in

the right iliac and lumbar regions. She is unable to lie on her left side on account of the pain, and is easiest when lying on her back with the right leg "straight out." During the four days immediately succeeding parturition there was a very copious discharge of blood, but after the fourth day this ceased, and for fourteen days thereafter there was a greenish watery discharge. For six weeks there has now been no discharge at all. Ever since the confinement pain of a labour-like character has been experienced in the back. There is difficulty and pain in passing urine, but it has never been drawn off. Fourteen days ago patient suffered for five consecutive days from diarrhoea.

Physical signs.—The abdomen, which is slightly prominent on the right side, is occupied by a globular and regular swelling, which measures transversely four and a half inches to the right, and one inch to the left of the umbilical line. Vertically this swelling extends to five and three quarter inches above the pubes. The cervix is located towards the right wall of the pelvis, and nearer the pubes than usual. The os is rather open. To the right of the cervix, and somewhat posteriorly, is felt a plastic exudation, which runs into the body of the uterus. The uterus

is rather fixed, but any movement of the abdominal swelling causes the cervix to move also, although feebly. The temperature is normal, and it continued normal whilst the patient remained in hospital, which she did for four weeks,—until, in fact, the swelling had so decreased in size that it could not be felt at all by abdominal examination alone. As the patient was rather anaemic when she came under observation, she was ordered a mixture containing chloride of calcium and tincture of the perchloride of iron; but as she improved the iron was omitted, and the administration of chloride of calcium with a bitter infusion was thereafter continued. Absolute rest in bed was enjoined during the first three weeks the patient was in hospital.

CASE 2. Plastic pelvic peritonitis developing during menstruation, and producing an abdominal tumour.—Alice D., aged 33, and married fifteen years, has had two children and one miscarriage. The last child was born twelve years ago, and the miscarriage occurred soon after the birth of the first child. One month ago the menstrual discharge appeared as usual, the patient having previously been perfectly regular, but instead of the flow ceasing after seven days, it has

continued more or less constantly ever since. For three weeks she has complained of pain in the left iliac region ; it is sometimes so severe that it causes her to "double up." There is no pain in passing water.

Physical signs.—The abdomen is not specially prominent. Palpation reveals a swelling which rises out of the pelvis and reaches to three inches above the pubes ; laterally it extends three inches to the left and half an inch to the right of the linea alba. The cervix uteri is located fairly centrally and is large. In front and to the right of the cervix a hard mass is felt, which is incorporated with the body of the uterus. The pelvis elsewhere is free from deposit. The abdominal swelling is continuous with the body of the uterus, which is rather fixed. The tumour is tender to the touch. The temperature in the mouth is 99.2° F.

Treatment.—Patient was kept absolutely at rest in bed for four weeks, and during this time the temperature never exceeded 99.2° F. The haemorrhagic discharge from the vagina ceased during the first week. In eight weeks the tumour had entirely disappeared, and the mobility of the uterus, which was then of a normal size, was not evidently impaired. Salicylate of soda with

tincture of cinchona was administered during the first ten days, then iodide of potassium with cinchona, and finally she had a mixture containing chloride of calcium and infusion of calumba.

Abdominal Tumour caused by Pelvic Peritonitis and subsequent Suppuration

In the majority of cases, whether complicated by fibro-myomatous neoplasms of the uterus or not, when pelvic peritonitis results in the production of a well-marked abdominal tumour suppuration has already occurred, and the pus may escape into the bowel, bladder, uterus, or vagina. Occasionally the abscess thus formed points and ruptures at some spot in the abdominal wall or perinæum, and in a few rare cases it may even pour its contents into the peritoneal sac, and prove in this manner rapidly fatal. When the abscess bursts into the bowel, bladder, or vagina, the seat of rupture is usually so located that the cavity is readily and perfectly drained, and the contents of the bowel and bladder it would appear seldom tend under such circumstances to regurgitate through the abnormal opening. By the aid of the elastic pressure of the

peritoneum the abscess which thus discharges its contents naturally is, as a rule, speedily obliterated, and the breach in the wall of the bowel or bladder is thereafter rapidly repaired. If, however, the pus burrows into the perinæum or is discharged naturally or artificially by the abdominal wall the convalescence is generally more protracted. Two or more large and distinct abscesses may form, especially when the uterus is the seat of fibro-myomatous growths, and these may burst in different directions, as in Case 2, where one ruptured into the bladder and the other into the bowel. It seldom, if ever, happens as a result of simple inflammation that an abscess bursts into the bowel and bladder, so that these two viscera communicate at the same time with the same suppurating cavity. When faecal matter is passed *per urethram* we should suspect the existence of some malignant disease.

Symptoms.—The symptoms at first are the same as those of an ordinary case of pelvic peritonitis, but eventually they become more or less characteristic of the occurrence of suppuration. A morning fall and an evening rise in the temperature may be observed. Fluctuation may or may not be detected, but otherwise the physical signs noted are those

with which we are so familiar as a result of pelvic inflammation.

Treatment.—Absolute rest should be enjoined, and the strength of the patient should be as well maintained as possible. Spontaneous rupture should, as a rule, be desired. As soon as it is apparent that suppuration is taking place, a mixture containing chloride of calcium with or without iron may be administered with marked benefit.

CASE 1. Suppuration consequent upon pelvic peritonitis producing an abdominal tumour.—
Fanny C—, aged 41, and married fifteen years, has had one child, which was born thirteen months after marriage. She was never again pregnant.

Five months ago patient, having just ceased menstruating as usual, had a rigor, and soon afterwards she began to complain of pain in the right iliac and lumbar regions and also in the right hip. She was advised to remain in bed, and on the eighth day after the rigor a haemorrhagic discharge from the vagina was observed, and this has continued to flow more or less ever since, *i. e.* for five months. At or about the time when menstruation would, under ordinary circumstances, have occurred, patient did not re-

mark any change in the amount or character of this vaginal discharge. For two months she has complained of periodic attacks of pain in the right side of the abdomen—slight lasting an hour and a half, and severe lasting four or five hours. During the last six weeks pus has been voided with the motions. There has never been diarrhoea nor any bladder trouble. The temperature in the mouth is 99·6° F. Twelve years ago patient states she had an attack of inflammation, and was then ill for five weeks.

Physical signs.—The lower and right half of the belly is occupied by a somewhat globular and regular swelling which reaches from the pubes to the level of the umbilicus. Here and there the percussion note over this tumour is resonant. The cervix uteri is located very high in the pelvis to the right of the middle line. The uterus is continuous with the abdominal swelling, and is incorporated with a plastic deposit which arises from the right side of the lower portion of the sigmoid and upper portion of the rectum.

Treatment.—This patient was kept absolutely at rest for four weeks. A vaginal douche of plain hot water of the temperature of 120° F. was given night and morning. A mixture of chloride of calcium with hydro-

chlorate of morphia was at first administered, but soon the morphia was omitted and chloride of calcium with calumba was thereafter ordered. During the first fortnight the haemorrhagic discharge from the vagina ceased, and a week later the purulent discharge with the motions disappeared. The patient thereafter made a good recovery, although the organs were still and no doubt would remain permanently matted together.

CASE 2. *Pelvic peritonitis ; fibro-myomatous growths in uterus ; suppuration ; pus discharged, first from bladder and then from bowel.*—Martha P—, aged 36, and married eleven years, has never been pregnant. Four months ago patient began to complain of pain in the lower abdomen, and more or less pain all over the belly has been experienced ever since. Soon after the pain was observed the menstrual discharge reappeared—a few days before its time. It was not more profuse than usual, but the menstrual function was held in abeyance thereafter for three months. During the three months the patient remained under treatment, menstruation recurred regularly. For a week the water has been very thick, and when examined it was found to contain a large quantity of pus.

Physical signs.—The abdomen is occupied by a small somewhat central and irregular swelling, which reaches to within one inch of the umbilicus from the pubes. The right half of this swelling is solid and nodular, whilst the left portion is cystic. The pelvis is occupied by a hard swelling, in the centre of which is the cervix. The temperature in the mouth is 100° F. The pus disappeared from the urine after having been observed for fourteen days. Three days later pus was voided with the motions, and it was then evident that the left portion of the abdominal tumour had ruptured into the bowel, as it rapidly disappeared. For five weeks, however, pus was detected with every stool.

The treatment adopted in this case was chloride of calcium with iron, and chloride of calcium with bark. Absolute rest was enjoined for nearly three months.

CASE 3. *Fibroid of uterus; perimetritis; suppuration; discharge of pus by abdominal wall.*—Jane S—, aged 45, and married twice, has never been pregnant. The menstrual discharge, which had recurred regularly, had always been very free. Ten weeks ago the monthly flow made its appearance at the accustomed time, but it was accompanied by

severe pain in the lower portion of the belly. On this occasion the catamenial discharge was unusually profuse, and instead of ceasing on the seventh day as usual it continued for fourteen days. The pain, which was very intense, persisted until three days ago, when about half a tea-cupful of pus was discharged from an opening in the abdominal wall on the left side at a spot on a level with the anterior superior spine of the ilium, and located about midway between this spine and the linea alba. Five weeks ago the menstrual discharge again made its appearance, and it has continued to flow slightly but constantly ever since. For three days the patient has now been quite free from pain, since, in fact, the abscess burst. There has never been any bladder nor rectal disturbance.

Physical signs.—The lower abdomen is occupied by a multinodular swelling, which extends almost from anterior superior spine of the ilium (right) to anterior superior spine of the ilium (left), and reaches from the pubes to one and a half inches from the umbilicus. The portion of the tumour which is located on the right side is solid and nodular. The condition of the abdominal wall on the left side renders it impossible to determine the consistence and outline of the tumour here.

The abdominal wall on the left side appears to be fixed to the underlying tumour ; it is indurated and inflamed, and from an opening located as described above pus flows freely when palpation is practised. The cervix uteri cannot be reached. Douglas's pouch is occupied by a hard irregular swelling, which is continuous with the right portion of the abdominal tumour. The temperature when the patient came under observation (three days after the abscess had perforated the abdominal wall) was 98·8° F., and during the months she remained under treatment it never exceeded 99·2° F. Twelve months later the sinus was still discharging a little pus.

The foregoing cases illustrate the frequent occurrence of menorrhagia or metrorrhagia in association with pelvic peritonitis, a fact to which I have elsewhere* drawn attention, and a symptom which some authorities do not substantiate.

* 'Diseases Peculiar to Women,' p. 40.

CHAPTER XIV

ENCYSTED SEROUS PERITONITIS OR EFFUSION OF SERUM CONSEQUENT UPON PERITONITIS AND CONFINEMENT OF THE FLUID BY ADHESIONS

IN consequence of a more or less extensive inflammation of the peritoneum, and especially of that portion of it which is located in the pelvis, an artificial but completely confined space may become distended with fluid and form an abdominal tumour. In the majority of cases the fluid which accumulates under such circumstances becomes purulent, and in this manner is produced one variety of pelvic abscess; but in a few rare instances the effusion retains throughout its serous character, and the condition known as encysted serous peritonitis is then exhibited. The transformation of serum into pus is gradually effected, and there is evidently no reason why, at least occasionally, the fluid which transudes during pelvic peritonitis should not contain a small amount of fibrin and very few cells, and present the

characters of an ordinary serous exudation. There is, moreover, distinct clinical and pathological evidence that this condition of affairs does actually obtain.

The various structures in the pelvis, together with some portion of the small bowel, the large bowel, or omentum, may enter into the formation of the wall of the cyst which is thus artificially produced. The development of such a tumour is preceded by or associated with symptoms which indicate the occurrence of pelvic peritonitis, and a careful examination of the pelvis will usually reveal the true nature of the disorder.

Of three cases of encysted serous peritonitis which have come under my observation the following is probably the best example :

Eliza R—, aged 20 and single, came under my care on September 18th, 1886, suffering from pain all over the belly, and of this she had complained for seven weeks. It was most intense in the right iliac region, and occasionally it radiated down the inside of the right thigh as far as the knee. The pain developed during the last menstruation—seven weeks ago—after the patient had been unwell four days. On this occasion the

menstrual discharge lasted fourteen days, but it was never profuse. Throughout this illness the abdomen has been slightly swollen. There is now no trouble with the bladder, although pain had been experienced before and during micturition until one week ago. During the last three weeks she has lost flesh. The temperature is $101\cdot4^{\circ}$ F. The abdomen is rather prominent, and everywhere it is very tender to the touch. Palpation reveals nothing definite. On vaginal examination there is detected in the right half of the pelvis, close to the uterus, a small swelling, the consistency of which is like that of the spleen. I did not again see this patient until January 8th, 1887, and on this day I made the following notes. "The temperature is normal. The belly generally is enlarged. There is no distinct evidence of fluid, yet the physical signs lead one to suspect the presence of such in the abdomen (encysted?). The plastic deposit to the right of uterus exists as before. January 22nd.—Unwell since last visit; lost as usual. February 5th.—The abdomen is occupied by a somewhat pyriform-shaped swelling, which extends from the pubes to the umbilicus. The percussion note over it is dull. Fluctuation is readily

elicited. To the right of the uterus the plastic exudation is still felt. The abdominal swelling appears to be continuous with the uterus. February 12th.—Physical signs as before. February 26th.—The abdominal swelling is practically unaltered. The uterus is drawn more towards the right wall of the pelvis; and the small plastic exudation, already noted as existing on the right side of the pelvis, is less distinct. March 12th.—Patient unwell this morning, losing fair amount. April 2nd.—The abdominal swelling is much reduced in size; it reaches to midway between the pubes and umbilicus. No deposit can now be detected vaginally to the right of the uterus, and this organ is closely applied to the right wall of the pelvis. May 7th.—No trace of the cystic tumour can be detected, and the only evidence of pre-existing change is the deviation of the uterus towards the right wall of the pelvis, to which it is closely applied."

The treatment adopted in this case was chloride of calcium in a mixture with strychnia, then iron with Spt. \AA th. Nit., and subsequently iodide of potassium with Tr. Cinchonæ.

CHAPTER XV

PELVIC HÆMATOCELE

FROM some structure in the pelvis blood may be so effused as to produce an abdominal tumour, and according to its location—in or outside the peritoneum—it constitutes what is termed intra-peritoneal or extra-peritoneal hæmatocele. In the intra-peritoneal variety the blood may be free, or it may be poured out into an inflammatory exudation and in this manner be confined. When free it gravitates to the most dependent part of the peritoneal sac, but on account of its dilution with the serous fluid it tends to remain liquid, and it may not, therefore, result in the formation of an abdominal tumour. The extra-peritoneal variety is usually located in the substance of a broad ligament, and here it may produce a tumour which rises into the abdominal cavity. An extra-peritoneal or a confined hæmatocele may eventually rupture and cause free hæmorrhage into the abdominal cavity.

By the rupture of a tubal pregnancy blood may be extravasated into the substance of the broad ligament or into the peritoneum, and it may even happen that both kinds of hæmatocele are produced in the same patient by this cause, the intra-peritoneal being secondary to the extra-peritoneal. Extra-peritoneal hæmatocele is occasionally observed when the menstrual discharge is suddenly arrested, and it probably is an accident of more frequent occurrence than we are generally induced to believe, as it may apparently exist without producing any marked symptom. It may develop after ligation and removal of the ovaries. Intra-peritoneal haemorrhage may be caused by the rupture of a varicose vein, and vessels in this condition are often detected in the pelvis, especially on the posterior wall of the uterus. I have seen blood poured into the abdominal cavity from the vessels in the fimbriæ of the Fallopian tube in consequence of the twisting of the pedicle of an ovarian tumour.

Symptoms.—The patient commonly complains of having been suddenly seized with pain in the abdomen, and of simultaneously—unless when the haemorrhage is slight—having experienced a sensation of faintness. If the bleeding continues and is profuse, the

slightest movement made by the patient, even as she lies in bed, may produce a feeling of intense exhaustion. Sickness is a frequent association.

Physical signs.—The face is more or less pale, and presents a somewhat anxious expression. The tongue is usually rather dry. The pulse may be small and rapid, and the temperature even may be slightly raised. The abdomen, which is as a rule tender to the touch and somewhat distended, may or may not be occupied by a distinct tumour. If the hæmorrhage has occurred into a broad ligament, the resulting tumour will be located laterally; when, however, it clots in the pelvis or in an inflammatory exudation, the swelling may occupy a more or less central position. When the pelvis is explored vaginally, it will be remarked that, according to the size and situation of the hæmatoma, the uterus is pushed more or less markedly towards one or other lateral wall of the pelvis, or towards the pubes. A tumour which contains blood-clot has a peculiar boggy feel.

Result.—When a distinct tumour is formed the blood may gradually be absorbed, or it may suppurate and form one variety of pelvic abscess.

Treatment.—When the hæmorrhage is con-

fined the patient should be kept perfectly at rest. The diet should be carefully regulated, and constipation should be avoided. If aperients are necessary these should be of the mildest character. In the way of medicines, iodide of potassium with cinchona, bromide of potassium with tincture of hamamelis, or chloride of calcium with or without morphia, may be administered. An extra-peritoneal or a confined hæmorrhage may eventually rupture into the abdominal cavity, and abdominal section may then be called for.

CHAPTER XVI

MULTIPLE HYDATIDS OF THE PELVIS

THE embryo of the *tænia echinococcus* very rarely, it would appear, finds its way into any of the organs or tissues of the pelvis, and consequently it seldom happens that a parasitic cyst originating in this locality forms eventually an abdominal tumour. Two tumours, however, of this description have come under my immediate notice. Both were multiple hydatids, and they occurred in young married women—aged respectively twenty-five and twenty-eight years—who had never been pregnant. One patient had complained of pain in and swelling of the belly for four years, whilst the other had observed the same symptoms for three years. In one case menstruation had recurred regularly and the discharge had been of the usual amount, whereas in the other this function had been performed very irregularly and the flow had been extremely scanty ever since the abdominal

pain, which was accounted the first symptom of the hydatid change, had been experienced. In both cases the tumours had been tapped once before the patients came under my observation, and in one as much as three gallons of fluid had been drawn off thus. Regarding the character of these fluids we were, however, unfortunately unable to obtain any information. The physical signs detected by abdominal and vaginal examination led me to express the opinion that the tumours were in all probability hydatid productions, and their true nature was afterwards determined in one case by post-mortem examination, and in the other by abdominal section. In both instances, although the chief cyst had supplicated, the temperature of the body was normal. The probable seat of origin of the primary cyst could not in either case be determined, as the intestines and the pelvic organs generally were more or less extensively incorporated with the tumour. In one of the cases a small cyst was discovered in the posterior wall of the uterus when the vaginal examination was made; and two other separate cysts of small size were detected in close apposition with the left border of the uterus. One patient died from maras-

mus and exhaustion after the tumours had been in existence for three years; and for some months before death life was sustained largely by nutrient enemata, as the stomach rejected almost immediately everything that was ingested. In the other case, with a history of four years' duration, the chief cyst was drained after having been stitched to the abdominal wall.

Tumours of this description might be mistaken for multinodular fibroids of the uterus, but much more readily for ordinary multilocular cysts of the ovary.

Treatment.—The treatment adopted must aim at killing the parent hydatid and its offspring. This result cannot be obtained by the use of medicines, but the animal may be killed when a portion of the liquid is removed from the cyst by means of a cannula. This operation is not free from danger, as acute peritonitis may ensue in consequence of the escape of a portion of the hydatid contents into the peritoneal sac, or suppuration of the tumour may afterwards occur. These dangers may be in a great measure averted if a fine trocar is used for tapping the tumour, and as the removal of a half or two thirds of the fluid is all that is necessary to kill the parent hydatid and its offspring, the cyst if very

large should not be completely emptied. If after a month or two the cyst refills, I would then advise abdominal section being performed, evacuation of the contents by a large opening, and the cyst-wall being afterwards stitched to the abdominal wall.

CHAPTER XVII

TUMOURS OF THE OMENTUM AND MESENTERY

Cancer of the Omentum

IN the majority of cases of primary cancer of the peritoneum the omentum becomes, as we would naturally expect, sooner or later more or less extensively diseased.

In association with ruptured ovarian cyst, it is remarkable that we should so frequently find the omentum converted into a solid tumour, which may present more or less markedly the appearances of malignancy. It is true that in the greater number of these cases we shall find evidence of a more or less malignant growth in the cystic ovary, but in a few no trace of such can be detected. The omental tumour thus produced may attain an enormous size, and it evidently is occasionally more benign than malignant in character, as after the removal of the diseased ovary or ovaries it may decrease in size and remain quiescent for a greater or less length of time. In many cases the growth

appears to be infiltrated with small sago-like bodies, the result of a mucous or colloid transformation of the epithelial cells.

Regarding the cause of this change in the omentum in cases of ruptured ovarian cyst, I am of opinion that it is primarily of a physico-chemical character, but that eventually through habit it becomes intrinsically chemical. The contents of a ruptured ovarian cyst are usually mucoid or colloid in character, and when this material is poured out into the abdominal cavity the cells of the peritoneum generally, but those more especially of the omentum, absorb it readily, and being thus largely fed their chemical constitution becomes in all probability correlative modified. If, however, the disturbing influence has not been too long in existence the cells may, when the material which fed them has been removed, gradually revert to their original state; but if the constitution of the cells has become thoroughly altered, redemption is hardly possible.

Cyst of the Omentum

Accidentally small cysts arising from the omentum have been observed when the abdominal cavity has been opened, but these are of no clinical importance.

Only a few cases are on record in which a simple cyst of the omentum has attained such a size that the discomfort resulting therefrom has induced the patient to seek advice.

Large cystic tumours originating in this structure produce no distinctive symptom, and their location cannot be determined by physical examination.

Treatment.—Removal by abdominal section.

Hydatids in the Omentum

It seldom happens that the omentum alone becomes the seat of hydatids, and when it does the probable location of the tumour or tumours cannot be determined, as they are generally of fair size before the patient seeks advice. Like hydatids elsewhere, these cysts may inflame and suppurate, and in this way abscess of the omentum may be produced. Simple abscess of the omentum must be an extremely rare condition.

Cysts of the Mesentery

Simple and hydatid cysts of the mesentery are occasionally observed; as, however, they present no distinctive symptom or sign, they are prior to abdominal section invariably diagnosed as ovarian cysts.

CHAPTER XVIII

TUMOURS CONNECTED WITH STOMACH AND BOWEL

Cancer of the Stomach

THE stomach frequently becomes the seat of malignant disease, but in the female this organ is less commonly affected than the uterus.

The disease usually begins at the pyloric extremity, but occasionally it appears at the cardiac end or even in the body of the stomach. When the disease is confined to the cardiac end no palpable tumour is produced, but when it develops at the pylorus it usually results in the formation of a tumour, which can be readily detected. Cancer of the pylorus will alone concern us at present.

The morbid cells originate from the glandular epithelium of the mucous membrane. They infiltrate the mucous and submucous tissues, and sometimes they penetrate to the subserous tissue, but it seldom happens that the growth extends to the peritoneum.

Disintegration of the cell-mass to a greater

or less extent results in the production of the so-called cancerous ulcer, and this process may extend to and invade other organs, such as the liver and transverse colon when, in consequence of a localised peritonitis, these organs have become adherent to the stomach.

Symptoms.—Pain in the epigastrium is frequently observed, and usually there is vomiting and rapid loss of flesh. There may, however, be neither pain nor vomiting, and during palpation even little or no tenderness in the epigastrium may be experienced. Vomiting, which may have been a marked symptom, may at any time during the progress of the disease suddenly subside, and thereafter solid food may be taken with impunity. In consequence of haemorrhage into the stomach the vomit may be of a coffee-ground character. Occasionally the symptoms are ill-defined and point rather to some functional disorder of the stomach, but being associated with marasmus and a cachectic appearance a suspicion of malignant disease is aroused.

Physical signs.—In the majority of cases a small cake-like tumour can be detected in the epigastric or umbilical regions. It is often located above and to the right of the umbilicus, and may be movable or more or

less fixed by adhesions. It is usually rather tender to the touch. Correlatively in consequence of the interference with the passage of the contents of the stomach this organ may become dilated.

Cancer of the pylorus is generally a disease of advanced life, but it may develop as early as thirty-five. I have seen the disease originate during pregnancy, and it is needless to say the diagnosis under such circumstances is difficult.

It is evident that the disease is often inherited.

The course of the disease is usually progressively from bad to worse, although occasionally periods of amelioration are observed.

Treatment.—Palliation is all we can attempt. Pylorectomy for cancer is an unsatisfactory operation, and so is gastrotomy with scraping of the growth.

Cancer of the Cæcum

It rarely happens that the cæcum becomes the seat of malignant disease; when, however, it does, the growth presents, as a rule, the characters of a cylinder-celled epithelioma. The variety of cancer found here resembles in fact, that most commonly met with in the rectum and sigmoid, and is frequently called

malignant adenoma. It is usually of slow growth, and tends soon to ulcerate.

Symptoms.—Pain, which at first may be of a dragging character, but which very soon becomes stabbing, is invariably the earliest symptom. At a late stage emaciation and slight oedema of the lower extremities may be observed.

Physical signs.—At an early stage of the disease a more or less firm, regular, smooth, round, and mobile tumour is detected in the region of the cæcum. In consequence of inflammatory disturbance around the gut, the tumour may become adherent to the abdominal wall, and its mobility then will be curtailed.

Treatment.—If the disease is recognised early enough, the diseased portion of the bowel may be excised. If the glands in the mesentery are evidently much infected, the idea of removing the growth should be abandoned.

Perityphlitis

This consists in inflammation of the cellular tissue located between the ascending colon and the iliac fascia, whereby a more or less distinct swelling arises in the neighbourhood of the cæcum. In the majority of cases

the disturbance originates in the cæcum or ascending colon, and extends to the connective tissue ; but it may by metastasis occur during typhus, septicæmic or puerperal fever. The inflammatory exudation may become absorbed ; more usually, however, it suppurates, and the resulting abscess may extend upwards to the kidney and downwards to Poupart's ligament, or even to the inner side of the thigh.

Symptoms.—As the disorder generally develops acutely, the symptoms are those of a grave localised inflammation, rigors, pain, frequent pulse, and elevation of temperature. To lessen the pain the patient usually lies on the right side, and keeps the right thigh more or less flexed on the abdomen. As a result of pressure there is often pain and numbness in the right thigh, and slight œdema of this extremity.

Physical signs.—Before suppuration occurs, a firm, regular, and smooth swelling is detected in the region of the cæcum, and it is covered anteriorly by this portion of the gut. If the phlegmon suppurates it increases in size, and fluctuation is elicited in the abdomen or thigh.

Results.—Resolution may take place without suppuration occurring. When an abscess

forms it may point externally, or rupture into the colon or into the abdominal cavity ; in the latter case death speedily ensues.

Treatment.—During the inflammatory stage leech ; when, however, it is evident that suppuration is taking place poultice, and as soon as matter is detected open.

Cancer of the Intestine

Rarely in the small bowel, but occasionally in the colon, and especially in the neighbourhood of the sigmoid flexure, cancer may develop and produce an abdominal tumour. The disease, which is usually of the epitheliomatous variety, tends to ulcerate readily, and it may, without producing even any marked thickening of the gut, cause perforation. It may occur at almost any period of life. Recently a young married woman, aged twenty, came under my care five weeks after parturition, suffering from cancer of the descending colon. The disease in this case resulted in the production of a tumour which extended from the level of the anterior superior spine of the ilium upwards for three inches, and the patient died from exhaustion after having been under observation only five months.

The tumour formed by cancer of the gut

is frequently ring-shaped or cylindriform. It is invariably more or less tender to the touch, and its consistence is mutable. At an early stage of the disease the tumour may be somewhat mobile, but in the majority of cases it tends eventually, in consequence of adhesions, to become fixed. Paroxysmal attacks of severe pain are occasionally experienced, and symptoms of intestinal obstruction are frequently observed. More or less rapidly death ensues from exhaustion.

Treatment.—Excision of the gut is occasionally practised, but it is extremely doubtful whether this operation is commendable or not. The serous membranes, peritoneum, and pleura may be extensively infiltrated by secondary deposits of cancer without there being any evidence of the existence of such a widespread infection.

Intestinal Concretions

In some of the lower animals, especially horses and oxen, intestinal concretions are occasionally formed from the hairs which they have licked and swallowed. In the human subject similar concretions are sometimes found. In one case a calculus of this description was apparently largely composed

of oatmeal, and in another the chief component appeared to be snuff.

Symptoms.—Concretions of this kind may exist evidently for a long time without producing symptoms; sooner or later, however, they tend to irritate or even inflame the structure which harbours them.

Physical signs.—As solid and globular bodies they may be detected in the stomach or large bowel.

Treatment.—Opium if necessary to allay spasm, and emollient enemata when the concretions are lodging in the gut.

Accumulation of Fæces in the Transverse Colon

In consequence of an accumulation of fæces in the transverse colon the liver may appear to be enlarged, and the tumour thus produced is usually hard and nodular.

Symptoms.—Usually there is a history of diarrhoea alternating with constipation, and of attacks of pain of a colicky character. Occasionally there is jaundice, vomiting, and hiccough.

Physical signs.—The hardened fæces can usually be indented.

Treatment.—Purgatives and enemata.

Agglomeration and Agglutination of the Intestines

The intestines with or without the omentum may become agglomerated and adherent, and in this manner an abdominal tumour may be formed. The tumour which is thus produced may vary in consistence. It is usually more or less globular, and it may become fixed at almost any position in the abdominal cavity. It is observed more especially in association with malignant disease of the peritoneum, but no well-marked malignant growth may participate directly in its formation. There may be no loss of flesh. Some ascites can generally be detected.

Tumours from Fæcal Extravasation

I have twice seen distinct tumours produced by extravasation of fæces in consequence of simple perforating ulcer in the large bowel.

In one case the tumour developed suddenly in the region of the right kidney. The swelling, which was soft and fluctuant, was opened as it was considered to be an abscess.

In another case the tumour, which was truly pelvic, was readily detected on bi-manual

examination. For one month prior to coming under my observation the patient, who was single and aged 57, had complained of pain in the lower abdomen. She affirmed that so long as she lay on her back she was quite free from pain, and also that after resting during the night she was invariably comfortable until about 12 or 1 o'clock midday, and that the pain thereafter gradually became more and more severe until she assumed the recumbent position. The tumour, which was of a somewhat pyriform shape, was detected in front of the cervix (which was located rather towards the left side), lying on the pelvic floor. When grasped between the external and internal fingers by bi-manual examination, the pain which was usually complained of was produced. It appeared to be cystic. This patient died from rupture of the faecal tumour into the general cavity of the peritoneum. A perforating ulcer was detected in the sigmoid, but it was evident that the faecal matter had for a time been confined by anterior abdominal and pelvic wall and anterior wall and left border of uterus with omentum and intestines. The opening in the gut was ovoid, and measured about two inches by one.

Ventral Hernia.

In consequence of the separation of the recti muscles the intestines may to a greater or less extent be included in a mesial sac, which is an extension of the abdominal cavity, and which is chiefly composed of serous membrane and skin. The intestines fall or are thrust into this bag when the erect position is maintained, or when by any special effort the abdominal muscles are brought into play. Separation of the recti muscles is commonly observed in women who have borne children, and occasionally it is gradually induced after ovariotomy, and other operations which have necessitated abdominal section mesially.

In many cases it is associated with a more or less marked disposition to prolapse of the uterus, and this condition adds greatly to the discomfort which the majority of these patients experience, viz. a more or less constant aching and dragging pain in the lower abdomen and pain in the back.

Treatment.—In mild cases much good may accrue from galvanism and the administration of tonics, but in others a properly adjusted abdominal belt is imperative.

Umbilical Hernia

In the majority of infants there is for a greater or less length of time after the remnant of the umbilical cord drops off a tendency for the bowel to thrust out the unclosed navel, and this protrusion is especially prone to occur in children who cry much. As soon as this disposition is observed it should be combated by the use of a well-fitting pad, which should cover the whole ring. If for a few months due attention is paid to this weak spot the ring will close, and it no longer will be a source of anxiety.

The acquired form of umbilical hernia is usually observed in women who have borne children and who are inordinately stout. The opening may be very wide, and the sac generally includes omentum and large as well as small intestine. The omentum is commonly adherent to the sac, and consequently it may not be reducible, but with care when urgent symptoms arise the gut can as a rule be returned.

Treatment.—A well-adjusted pad should be worn, and in cases in which the omentum is adherent to the sac the pad should be more or less hollowed.

Femoral Hernia

This variety of hernia is more commonly observed in the female than in the male. It consists in the protrusion of a portion of the bowel, of the omentum, or of the two together, through the innermost compartment of the sheath of the femoral vessels and through the saphenous opening in the *fascia lata*. It is often detected in women who have borne children, so that it is highly probable that pregnancy and parturition predispose to its occurrence. In the female the abdominal aperture of the femoral ring is larger than in the male, but acute strangulation is apt to occur in consequence of the dense unyielding character of the structures which enter into the formation of the upper and inner portion of the femoral canal.

The patient will usually remark that a small swelling has appeared in the groin, but that it disappears when the recumbent position is assumed. The hernia may, however, cease to be spontaneously reducible and may even, in consequence of the adhesion of the contents to the sac, become irreducible.

The physical signs of a hernial tumour will vary according as the sac contains bowel only or omentum only. If bowel only, it

may be more or less tense and somewhat cystic, and generally an impulse on coughing is detected. If omentum only, the swelling may be doughy and somewhat lobulated, in fact an omental hernia presents similar characters to those of a fatty tumour. If strangulation occurs, the hernial swelling becomes as a rule painful, the vomit is faecal, the tongue becomes dry and brown, and the pulse is too frequent.

Treatment.—If the contents of the sac can be returned into the abdomen, a truss should be worn. If the tumour is an irreducible omental hernia, the question of operation may be considered ; when however the hernia, whether bowel or omentum, becomes strangulated, operative interference is imperative.

Inguinal Hernia

The contents of an inguinal hernia may be similar to those of a femoral.

Two forms of inguinal hernia are recognised ; these are distinguished according to the spot at which they first enter the inguinal canal, as well as by the relationship to the epigastric artery. It is said to be oblique or external if it passes through the whole length of the inguinal canal, and it is then external to the epigastric artery. It is

direct or internal if it passes immediately through the external abdominal ring at a spot which is internal to the epigastric artery.

The physical signs observed in and the treatment requisite for inguinal is the same as for femoral hernia.

CHAPTER XIX

TUMOURS PRODUCED BY THE LIVER

Uniform Enlargement of the Liver

WITHOUT the configuration of the organ being disturbed, the liver may become more or less enlarged in consequence of a simple increase in the amount of blood which it contains—a condition which is recognised by the term congestion,—in consequence of a deposition of amyloid or fatty material, or as a result of chronic inflammation of the connective tissue during the early days of cirrhosis.

1. *Congestion of the liver.*—Under ordinary circumstances it is remarked that the amount of blood which the liver contains is augmented by the ingestion of food, but it is observed that the increase is regulated largely by the amount and character of the food taken. This is a temporary and healthy variation.

In congestion of the liver the organ con-

tains at all times a much larger quantity of blood than it ought to.

Symptoms.—A feeling of tightness in the hepatic region may be experienced, and the liver is usually more or less tender. As a rule there is decided evidence of derangement of the gastro-intestinal tract, and occasionally there is slight jaundice. In protracted cases haemorrhoids or ascites may arise in consequence of the obstructed portal circulation.

Physical signs.—The liver is uniformly enlarged, and usually more or less tender on pressure. Its surface is smooth.

Causes.—Mitral or tricuspid valvular disease of the heart. Irritating ingesta, especially when a sedentary life is led.

Treatment.—Remove if possible the cause. If it is evident that the food has been too rich and that irritating beverages have been taken, the diet should be carefully regulated. A saline aperient should occasionally be administered. A mixture containing carbonate of bismuth and bicarbonate of potash may be of use at first when there is headache, loss of appetite, and a furred tongue. Chloride of ammonium or nitro-muriatic acid may also be advantageously employed.

2. *Amyloid, waxy, or lardaceous liver.*—In this disease the hepatic tissue becomes converted into a substance whose chemical characters are unlike those of any normal constituent of the body, but it is noteworthy that whilst the organ retains its shape it becomes at the same time enormously enlarged.

Symptoms.—It produces as a rule no symptom which, strictly speaking, can be attributed to the change in the liver alone.

Physical signs.—The liver is usually very much enlarged, but its shape is not essentially altered. Its edges are rounded, and the consistence of the tumour is firm. It is seldom tender to the touch.

Cause.—It is caused most commonly by tuberculosis of the lung, but also by syphilis and chronic suppurations connected with disease of bone. The spleen, kidneys, stomach, and intestines suffer invariably more or less from this variety of degeneration with the liver.

Treatment.—Remove if possible the cause. Administer iodine where syphilis is suspected. The diet should be as nutritious as possible. Chloride of calcium in ten-grain doses three times a day may be advantageously given.

3. *Fatty liver.*—This disease consists in a

fatty infiltration of the liver, whereby the organ without its shape being materially altered becomes more or less enlarged.

Symptoms.—It is characterised by no well-defined symptoms. The change takes place slowly and painlessly.

Physical signs.—The liver dulness is pretty uniformly increased, but the enlargement is seldom so great as in the case of waxy degeneration. The consistence of the tumour is soft and doughy.

The infiltration is usually associated with the deposition of fat in other structures and organs of the body.

Treatment.—Regulate the diet, and advise exercise.

4. *Incipient cirrhosis of the liver.*—In the early days of cirrhosis the liver is often very much enlarged in consequence of a chronic inflammation of the connective tissue of the organ.

Symptoms.—There is evidence of marked disturbance of the gastro-intestinal tract, as the patient usually complains of sickness, especially in the morning, of a disinclination for solid food, and of a tendency to diarrhoea. In the female there may be menorrhagia, but more frequently there is amenorrhoea.

Physical signs.—The liver is uniformly

enlarged. Its surface is smooth or slightly uneven, and the organ is more or less tender. In the female when there is menorrhagia there is often albuminuria.

Treatment.—The diet should be carefully regulated, and all alcoholic liquors should be forbidden. The state of the gastro-intestinal tract should be improved by the administration of bismuth and potash, and afterwards chloride of ammonium or nitromuriatic acid may be tried.

Cancer of the Liver

This, which is occasionally observed as a primary disease, is usually secondary to malignant change elsewhere, especially in the stomach or bowel. The liver as a whole may be more or less infiltrated by cancer, and consequently the configuration of the organ may be but little disturbed. As a rule, however, the deposition takes place irregularly, and results in the production of nodules of greater or less size, and some of these when located near the surface may be detected by palpation. In consequence of the degeneration and absorption of some of the cells the centre of the nodules becomes depressed, a phenomenon which when felt is sufficient to stamp the character of the growth.

The disease runs invariably a rapid course, and results in death in from six to twelve months.

Symptoms.—Pain of a stabbing character is a common association of cancer of the liver, and the organ is more or less tender. Occasionally throughout the existence of the disease little or no pain is experienced. Jaundice is frequently observed, and once developed usually persists. In many cases, especially towards the close of the disease, a greater or less amount of fluid can be detected in the abdominal cavity. Jaundice and ascites commonly coexist. Hæmorrhage from the cancerous growth may take place into the peritoneum. Occasionally there is fever. There is progressive emaciation and evident derangement of the gastro-intestinal tract. The cancerous cachexia, which is characterised by an earthy chlorotic appearance (unless there be jaundice), debility, and wasting, are usually observed at an early stage of the disease. If cancer of the liver is secondary to cancer of the stomach, bowel, uterus, or some other organ, then the symptoms produced by the disease in the organ primarily affected will also attract attention.

Treatment.—Relieve as far as possible the pain and general discomfort. For pain

morpia or opium is generally necessary, but conium may produce the desired effect. To procure sleep chloral hydrate or chloral-amide (dose twenty to thirty grains) may be administered. In the diet starchy and fatty foods should be reduced, and butcher's meat should be taken freely. If constipation is troublesome, give a pill at night containing two grains of pill colocynth with hyoscyamus, and two grains of blue pill or some of the compound liquorice powder.

Hydatids of the Liver

Of all the organs of the body the liver is that in which hydatids most frequently develop. They arise when an embryo of the *tænia echinococcus* lodges in the hepatic tissue. One or more tumours may exist, and may attain a great size. In this country, although the disease is less common than in some other countries, it is by no means rare.

Symptoms.—The tumour, which is, especially at first, of slow growth, produces as a rule no symptoms. It is usually painless : when the sac becomes inflamed it may be more or less tender. Discomfort may result when its size is great. It may embarrass the breathing. Jaundice and ascites are rare consequences. The sac may inflame

and suppurate, and then the constitutional and local phenomena of abscess may be observed.

Physical signs.—The tumour, according to its size, alters more or less the configuration of the liver. It may cause great distension of and fill almost entirely the abdominal cavity. Fluctuation may be detected, but if the cyst is deeply situated the intervening liver tissue may mask this sign. The so-called “hydatid thrill” is not peculiar to cysts of a parasitic origin; a similar sensation may be observed when an ovarian cyst with a tense wall and thin fluid is suddenly struck with the finger-tip.

Diagnosis.—This is aided by the slow growth of the tumour, the fact that it has grown from above downwards, and the absence, practically, of symptoms. The cyst may open into a bile-duct, and the symptoms of biliary colic may result therefrom.

Treatment.—As the animal commonly dies when the fluid which fills the cyst is drawn off, a fine cannula of an aspirator may, with this intention, be inserted. If suppuration results from tapping or independently of this procedure, hepatotomy may become necessary.

Abscess in the Liver

Suppuration in the substance of the liver may occur independently of pyæmia. Instead, however, of the liver being uniformly enlarged from the presence of many small abscesses, as in the case of pyæmia, the configuration of the organ is disturbed by the presence of one or very occasionally more abscesses, which may have attained a great size. The single large abscess is much more commonly observed in warm than in temperate climates. In this country it may, however, be observed as a result of some local injury to the liver, or in a person who has lived in the tropics.

Symptoms.—The symptoms of suppuration are preceded by those of congestion. These are chilliness with fever, pain, and tenderness, or more commonly a feeling of weight, fulness, or uneasiness in the hepatic region. There may be no local signs of mischief in the liver; fever of an intermitting or remitting character may be the sole symptom.

If suppuration is likely to result, these evidences of disturbance will persist after ten or twelve days, the period at which, if resolution were going to take place, we should expect evidence of improvement. When suppuration occurs, the fever assumes the hectic

type, and the patient gradually loses flesh. Rigors are seldom observed, and jaundice is rare. Pain may or may not be complained of; when present it is usually dull in character rather than acute.

Physical signs.—Before suppuration takes place the liver is slightly but uniformly enlarged. When suppuration occurs the configuration of the organ is altered, and a more or less marked amount of bulging may be detected. Fluctuation can generally be elicited, except when the abscess is deeply seated. The liver tissue in the immediate neighbourhood of the abscess is often hard.

Treatment.—When it is evident that suppuration has occurred, then the abscess should be opened, and if necessary, *i.e.* if the abscess has not already become adherent to the abdominal wall, the opening in the liver should be stitched to the abdominal wall. The operation by abdominal section is far safer than drawing off, or attempting to draw off, the contents of the abscess by means of an aspirator or a cannula.

Pyæmic Abscesses in the Liver

During the course of an attack of pyæmia a greater or less number of small abscesses may form in the substance of the liver, and

consequently the size of the organ may be augmented. The enlargement usually is slight, but occasionally it is so great that the lower margin of the liver extends to the umbilicus.

Symptoms.—As the abscess-formations take place during the course of pyæmia we are confronted at the outset by the evidences of the existence of this disorder, and usually the source of origin of the pyæmia can be traced. The common associations of pyæmia are fever, rigors, perspirations, emaciation, and occasionally vomiting and diarrhoea. A typhoid state may as the disease advances be induced, the tongue becomes dry and brown, the patient becomes restless, and more or less delirium is observed. The temperature oscillations may be great and the rigors may recur with much regularity. As the suppuration proceeds in the liver, pain, which is an invariable, is usually the first symptom. If the abscess approaches the peritoneal surface the pain may be severe, and it is often increased by coughing or taking a deep breath. In the majority of cases jaundice is observed, but usually it is slight.

Physical signs.—In consequence of the small size of the abscesses, as a rule the

liver is uniformly enlarged. Should, however, one of the abscesses attain a greater size than usual, then a more or less marked amount of bulging may be observed. Fluctuation cannot be elicited except in a few anomalous cases.

Causes.—The phenomena of pyæmia depend upon the presence of septic material in the blood, and the infection usually takes place at some raw surface.

Treatment.—Nutritious diet, stimulants freely, and large doses of quinine. If the diarrhoea is excessive give a pill containing sulphate of copper, powdered opium, and powdered ipecacuanha, made up with extract of hæmatoxylin.

*Spurious Tumours—Hepatic—produced by
Tight Lacing*

A tumour which may be recognised as a displaced liver is occasionally detected in women as a result of tight lacing. So great may be the displacement that the lower margin may extend to the ilium, and the organ may appear to fill almost entirely the upper abdomen.

If pressure has been exerted by a tight cord the liver may consequently become more or less deeply fissured, and atrophy of

the hepatic tissue may proceed to such an extent along this groove that eventually a movable tumour, which is a partially detached portion of the organ, is produced. On percussion a narrow area of resonance may be detected between a spurious tumour of this description and the general liver dulness.

Diagnosis.—This is arrived at chiefly by a process of exclusion, but we are aided in our deliberations when there are evident signs of tight lacing in the walls of the chest and abdomen. There should be an absence of symptoms of disease of the chest, liver, and gall-bladder.

CHAPTER XX

ENLARGEMENTS OF THE GALL-BLADDER

As the enlargements of the gall-bladder are chiefly dependent upon the existence of gall-stones, we may direct our attention at the outset to the symptoms which these concretions may produce, to the situations in which they may be found, and to the manner in which they sometimes are extruded from the body. Composed largely of cholesterin and bile pigment, gall-stones form apparently in consequence of some functional derangement of the liver. They are apt to appear in persons who live a sedentary life and partake freely of saccharine food, and for this reason evidently they are more commonly met with in females than males, and especially during middle and advanced life.

Biliary calculi, in greater or less numbers, may exist in the gall-bladder without producing any symptom. When, however, a gall-stone enters the bile-duct, and when more especially it attempts to traverse this

canal, symptoms of a well-defined character are usually produced. These are pain, vomiting, jaundice, and occasionally rigors. The pain, which may be severe from the outset or may gradually become more and more intense, starts about the epigastrium, and radiates towards both hypochondriac regions and upwards towards the back of the chest and neck, but never downwards. The paroxysmal attacks of biliary colic which result from the passage of a gall-stone along the common duct may induce a state bordering on, if not of actual collapse. Vomiting is a common association, and the act is usually followed by a longer or shorter period of immunity from pain. Jaundice usually appears within twenty-four hours after the commencement of an attack of biliary colic. It is not, however, an invariable symptom, for it is evident that stones are often passed without jaundice making its appearance. No jaundice may result if the stone passes rapidly along the duct, or if its shape is such that bile can pass by the side of it. The jaundice thus produced is generally temporary, but occasionally, in consequence of the impaction of a stone, it may become permanent. If the duct has been well dilated once it is quite possible that many small stones may there-

after pass without producing either pain or jaundice. Rigors are occasionally observed, and these may recur with more or less regularity.

The symptoms of gall-stone may result sometimes from inspissated or gritty bile, so that in such cases, although the fæces may be carefully examined after an attack of biliary colic, no gall-stone may be found.

Situations in which gall-stones may be found.

—The gall-bladder is the location in which gall-stones are most frequently detected, and here they may exist in large numbers without even causing any symptom. A calculus may lodge in the neck of the gall-bladder, or become impacted in the cystic duct; under such circumstances, however, jaundice does not result. It rarely happens that calculi are found in the bile passages within the liver or in the hepatic duct before it joins the cystic duct, but they frequently lodge in the common bile-duct. When they enter the latter canal they pass, as a rule, sooner or later into the duodenum, and thereafter they may be voided by the lower bowel. It sometimes happens that intestinal obstruction depends upon the impaction of gall-stones in the bowel. When the gall-bladder containing biliary calculi becomes adherent to

the abdominal wall and suppurates—an accident which sometimes occurs after parturition—the stones may be discharged through fistulous tracts in the abdominal wall.

1. *Enlargement of the gall-bladder may be caused solely by the presence of gall-stones in its interior.*—The tumour thus produced is hard and painless, and with the liver moves with inspiration and expiration. On carefully manipulating the swelling a crackling sensation is occasionally experienced.

If the mucous membrane of the gall-bladder is ulcerated and more or less inflammation of the peritoneal covering of the gall-bladder has been set up, then the tumour may be painful and somewhat fixed.

2. *Enlargement of the gall-bladder from accumulation of bile.*—Bile will accumulate in the gall-bladder in consequence of obstruction of the common duct. The tumour thus produced is pear-shaped, elastic or fluctuant, and slightly tender.

In a few rare cases the gall-bladder may become enormously distended with bile, and may contain as much as eight pints of this fluid. If the obstruction is at any time removed the bile will pass on into the gut, and the tumour may disappear. If the obstruction is permanent the bile may gradu-

ally become absorbed, and the tumour may consequently decrease markedly in size. If degenerative change has weakened the walls of the gall-bladder they may rupture, and fatal peritonitis may then result.

3. *Enlargement of the gall-bladder from accumulation of a serous-looking fluid.*—In consequence of complete occlusion of the cystic duct the gall-bladder may gradually become distended with a clear fluid of a very low specific gravity. Such a tumour may attain the size of the fist. It may occupy a mesial position, but it is usually located more especially to the right of the mid-longitudinal line. Its lower border may be detected two, three, or more inches below the level of the umbilicus. It may be fairly movable, especially towards the right half of the abdomen. No history of biliary colic or jaundice may be obtained. In one case of this kind which came under my notice the tumour, which had never varied much in size, had been observed for six years, and the sole complaint was the presence of the swelling.

4. *Enlargement of the gall-bladder from suppuration.*—A gall-bladder which contains biliary calculi may inflame and suppurate. This event, it would appear, is especially prone to occur after parturition. No tumour

may be detected until the patient has suffered from two or more attacks in which she has complained of severe pain in the region of the gall-bladder, and during which there has been more or less fever. In the majority of cases it is impossible to determine why suppuration should have occurred. When, however, this change does occur the distended gall-bladder usually becomes adherent to the abdominal wall, and the resulting tumour, which is fluctuant and appears to be actually confined to the abdominal wall, is more or less indurated at the circumference. Eventually one or more fistulous openings may appear in the skin of the abdomen, and thus gall-stones may be extruded.

5. *Enlargement of the gall-bladder from cancer.*—Occasionally the gall-bladder is primarily the seat of malignant disease, and it is remarkable that gall-stones are frequently found in association with cancer of this organ.

The resulting tumour may be hard and nodulated, or somewhat soft. It is usually fixed, and more or less tender. It may grow rapidly, and when the common bile-duct becomes involved jaundice and vomiting may be noted. Emaciation is commonly a marked symptom.

Treatment.—In malignant disease of the gall-bladder palliation is all that can be attempted. When suppuration occurs, or a tumour of some size exists, cholecystotomy may be recommended.

CHAPTER XXI

TUMOURS OF THE PANCREAS

Cancer of the Pancreas

IN the majority of cases when the pancreas becomes the seat of malignant disease, it is the head of the organ—that portion which lies in the curvature of the duodenum—which is most commonly affected. The disease may be of the soft or colloid variety, but usually it is of the scirrhus type, and the resulting tumour is hard.

Symptoms.—Pain of a lancinating character is sometimes complained of in the epigastrium. As the disease advances it may obstruct the pancreatic duct (the canal of Wirsung), and consequently the fatty materials taken with the food are voided with the motions without having undergone much change during their sojourn. The ductus communis choledochus may also become obstructed eventually, and jaundice may in this manner be produced. Directly or in-

directly it may cause obstruction of the duodenum, and thus dilatation of the stomach may result.

Physical signs.—The tumour, which seldom attains a large size, is detected in the epigastrium near to the right hypochondrium. It is usually a hard, rounded or irregular swelling, and is more or less painful to the touch.

Treatment.—Palliate.

Dilatation of the Pancreatic Duct

In consequence of obstruction of the pancreatic duct from calculi, from cancer of the head of the pancreas, or from tumours in the neighbourhood, this canal may become more or less distended, and thus may be formed either a series of little cysts or a well-defined unilocular swelling.

Symptoms.—If the dilatation is due to some tumour, it is probable that any associated symptoms will depend rather upon the presence of the new growth than upon the condition of the duct itself. Under any circumstances, however, the patient may have observed that fat is constantly discharged with the motions.

Physical signs.—The swelling formed by a distended pancreatic duct will be located in the epigastrium, and fixed. It may be

rounded or more or less irregular. If large enough, fluctuation can be elicited.

Treatment.—If after watching for a time it is evident that the tumour is increasing and is likely to continue increasing, then the question of opening the cyst and stitching it to the abdominal wound may be discussed.

Traumatic Cyst of Pancreas

Cysts of greater or less size containing blood-stained fluid may arise in the pancreas as a result of injury.

CHAPTER XXII

TUMOURS DEPENDENT UPON THE SPLEEN

Chronic Enlargement of the Spleen

IN consequence of repeated attacks of ague—or not infrequently quite independently of this influence—the spleen may become permanently and greatly enlarged. The configuration of the organ is as a rule well maintained, and the capsule is invariably much thickened.

Placed almost vertically in the body, the spleen under ordinary circumstances is a somewhat compressed oval body possessing two faces. The external face turned to the left is convex and free, whilst the internal directed to the right is concave and is divided by the hilus, the place at which the vessels enter the organ, and the peritoneal covering forms the gastro-splenic omentum. The lower end of the organ is the more pointed, and towards this extremity the anterior border, which is thinner than the posterior, is often somewhat notched.

Symptoms.—In many cases the patient complains of a dragging sensation in the left hypochondriac region. It is difficult to say whether the sudden attacks of severe pain in the abdomen which patients who have enlargement of the spleen occasionally suffer from are caused by disturbance in the vessels of this region, or are dependent upon changes in other viscera. During the occurrence, however, of one of these attacks it frequently happens that a “lump,” which proves to be the enlarged spleen, is for the first time detected, and the patient otherwise may appear to be in perfect health.

Physical signs.—As the spleen increases in size and weight it gravitates somewhat in the abdominal cavity, and tends eventually to assume a more or less transverse or inverted position. In the latter case the organ lies more on the right side of the body, and the more pointed end instead of being the lower is the upper extremity. The anterior border as a rule continues anterior border, and on careful palpation the notches will often be detected, more especially towards the pointed end. The tumour, which is solid, may be harder or softer in consistence. It is movable, and its position will be found to vary according to the position of the patient, but

it will usually be observed that the excursion performed by the tumour is greater when the patient lies on the left than on the right side. If the tumour is pushed towards the right the patient usually experiences a "dragging" sensation in the left hypochondriac region.

Treatment.—In my opinion splenectomy, *i. e.* removal of the spleen, should not be undertaken for this disorder. The effect of quinine, iodine, and possibly iron, should be tried in all these cases.

Enlargement of the Spleen in association with Leukæmia (Leucocythaemia)

In association with leukæmia—a disorder in which the white blood-corpuscles are greatly in excess of normal—the spleen is almost invariably found to be more or less enlarged. For a time the enlargement appears to be due to an increased determination of blood to the organ, and occasionally it takes place so rapidly that the spleen ruptures spontaneously. This stage is succeeded by one of induration, and eventually the greatly enlarged organ becomes hard and dense. In this disease the lymphatic glands too are usually more or less enlarged,

especially those located in the armpit, groin, and neck.

Symptoms.—In many cases the first symptom is a feeling of fulness in the abdomen, and a “dragging” sensation in the left hypochondrium. During the early days of the disease there may be no evidence of disturbance of the blood. Sooner or later, however, the patient becomes pale and cachectic, and symptoms similar to those of anaemia are complained of. In a few cases we observe a disposition to haemorrhage, especially from the nose and intestinal canal.

Physical signs.—In so far as the splenic tumour is concerned, these are similar to those of a chronically enlarged spleen.

Treatment.—Iron, quinine, and arsenic may be tried.

Hydatids in the Spleen

It but rarely happens that the spleen harbours the embryo of the *tænia echinococcus* and becomes the seat of hydatid cysts. Under such circumstances the spleen is enlarged, but the change cannot be characterised by any symptom or physical sign.

Recently a case of hydatid cyst of the gastro-splenic omentum came under my observation, and as the tumour was associated

with menstrual disturbance, and could be felt *per vaginam* on the left side of the uterus, I performed abdominal section under the impression that it was a pedunculated cyst of the broad ligament. It was of the shape of a Florence flask, and was extensively adherent to the anterior abdominal wall and to the omentum. The neck of the tumour was continuous with the gastro-splenic omentum, and a portion of the latter structure was ligatured and thereafter severed after the fashion of an ordinary ovarian pedicle. The cyst, which was flaccid, contained fatty débris, and it was evident that the animal had died some time prior to operation. The patient recovered.

Treatment.—If in any case on abdominal section the spleen is found to contain hydatid cysts, these tumours should be emptied and the cyst wall should be stitched to the wound in the abdominal wall and drained.

Abscess of the Spleen

Simple abscess of the spleen is very rarely seen. When observed it would appear that the organ must at an early stage have become adherent to the abdominal wall, and that the pus has generally effected its escape externally through the abdominal parietes.

During the course of ulcerative endocarditis multiple small abscesses of a metastatic nature are occasionally developed, but they cannot be diagnosed during life.

Wandering Spleen

Very occasionally, but invariably in women, a small tumour, which presents the characters of a normal spleen, and which is in fact a movable spleen, may be detected in some portion of the left abdomen, or even in the pelvis.

Tumours Proper of the Spleen

These are very rarely observed. Cases of fibroma, sarcoma, and cavernous angioma have been recorded.

CHAPTER XXIII

TUMOURS CONNECTED WITH THE KIDNEY

Floating and Movable Kidney

THE kidney under ordinary circumstances receives anteriorly and at its upper end but a very partial covering from the peritoneum. It lies embedded in areolar tissue, and is practically a fixed organ. In a few rare cases the kidney is completely surrounded by peritoneum, and possesses a mesentery in which the vessels run, a condition of affairs which allows of a greater or less amount of excursion. To this variety of displacement, which is of congenital origin, the term "floating kidney" is applied; but it is impossible during life to differentiate it from the commoner variety, the so-called "movable kidney." In the latter variety the mobility depends not upon the anatomical relationship of the peritoneum, but simply upon the fact that the organ is or has become more loosely embedded than usual,

so that it moves within its fatty capsule, or carries this with it in its movement. The right kidney is that which is the more liable to be thus disturbed, and the change is most frequently observed in women, and especially in those who have borne children.

A movable kidney may be perfectly healthy, but the abnormal condition may cause obstruction of the ureter, and thus hydronephrosis may result ; or, again, inflammation of the pelvis may arise.

In consequence of the intimate nerve relationship which exists between the uterus—with the Fallopian tubes—and the kidney, it is frequently remarked that a movable kidney tends to increase in size during menstruation, and that comparatively there is an aggravation of the symptoms.

Symptoms.—In many cases little or no discomfort is experienced. Pain in the loin of a dull aching character is often complained of, and this is usually intensified by any extra effort, or by riding in a vehicle. Occasionally the patient suffers from recurring attacks, which are similar to those of renal colic—attacks in which the pain becomes intense, and there is frequent vomiting. Nervous disturbances of the stomach and bowel, as well as severe attacks of cramp, are some-

times caused by this abnormal condition of the kidney. The symptoms, which are affected by the position of the body, are lessened when the patient is recumbent on the back.

Physical signs.—The tumour, which is almost invariably the right kidney, will be found in the right half of the upper abdomen, as it seldom happens that the organ is capable of being moved beyond the middle line of the body. It is of the shape, size, and consistence of a normal kidney, and when grasped between the fingers it readily slips away in the direction of its recognised position. Whilst the tumour is being manipulated the patient will often complain that a feeling of nausea is thereby produced.

Treatment.—If necessary the excursions of the organs should as far as possible be prevented by means of a well-adjusted abdominal belt. The cases which demand nephorrhaphy, and still less nephrectomy, must be extremely rare.

Hydatids in the Kidney

When the embryo of the *Tænia echinococcus* lodges in the substance of the kidney it speedily develops a cyst which tends not only to increase in size, but in complexity, and the whole product is surrounded by a

fibrous capsule which has been evolved by the renal tissue. The cyst wall, which is of considerable thickness, is composed of two layers, an external and an internal, and the stratification of the external is characteristic of its origin. Inside the primary or mother cyst arise secondary and even tertiary vesicles, the so-called daughter and grand-daughter cysts. If the internal wall of a fresh vesicle be examined, the brood capsules, which contain the heads of the worms, are detected as small white spots.

In consequence of the pressure exerted by the cyst, atrophy of the renal tissue results, and occasionally the tumour bursts into the pelvis of the kidney, the stomach, intestine, or thorax. The animal dies, as a rule, when the fluid which fills the vesicles escapes, but it may also die spontaneously. When the latter event occurs the vesicles shrink, and thereafter the contents may dry up, and there may remain merely a cheesy or calcareous mass. Occasionally the cyst inflames and suppurates.

Usually one kidney only is affected.

Symptoms.—Sometimes there is a feeling of weight, or pain is complained of in the lumbar region. In many cases there are no symptoms until rupture occurs. If the cyst

bursts into the pelvis of the kidney the symptoms are those of renal colic, and subsequently a gelatinous or membranous material and the hooklets of the hydatid are detected in the urine.

Physical signs.—Occasionally a fixed, globular, soft, and fluctuating tumour is detected in the loin.

Treatment.—As the animal may be killed by drawing off the fluid which fills the vesicles, tapping is commendable; if, however, this operation fails to produce any decided result the cyst should be freely opened and drained.

Cystic Transformation of the Kidneys

This is a chronic disease in which both kidneys, as a rule, are converted into a congeries of cysts of varying, but usually of small size. When detected, even in an advanced state, in the adult, it is highly probable that the change is of congenital origin. The surface of the greatly enlarged kidney is rendered uneven by the presence of the cysts, but the configuration of the organ is well maintained, as the renal tissue is pretty uniformly invaded by them. The fluid contained in these cysts may be clear or muddy, and the constituents of urine may be extracted from it. It is probable, therefore, that the

degeneration is due to obstruction of the uriniferous tubules.

Symptoms.—Sometimes recurring attacks of haematuria are complained of at intervals, it may be of three or more years. The functions of the kidney may, however, be preserved undisturbed for a long time. Pregnancy and parturition even may occur in a woman suffering from the disease in an advanced form, without producing any untoward result.

Physical signs.—As both kidneys are usually affected, a multilocular cystic tumour, with an outline of an enlarged kidney, is felt on each side in the lumbar region.

Result.—The disease often ends fatally with uræmic symptoms.

Treatment.—Palliate.

Hydronephrosis

This disease consists in a dilatation of the pelvis and calyces of the kidney with fluid, as a result of obstruction of the urethra or ureter. For a time after obstruction occurs urine continues to be excreted, but this soon ceases, and thereafter, the urinary constituents becoming absorbed, an albuminous fluid is secreted. The pressure exerted by the accumulating fluid produces atrophy of

the renal tissue, and this destructive process may so proceed that eventually the kidney becomes converted into a cyst with a fibrous wall, and containing partitions which correspond to the divisions between the calyces. If the obstruction is located in the urethra there is dilatation and hypertrophy of the bladder, and both kidneys are affected although not equally so. According to the seat of obstruction the whole or a portion only of the ureter will become distended, and usually it is convoluted.

Symptoms.—Until a tumour of some size is produced the subject of hydronephrosis complains, as a rule, of no symptom. When even the abdomen is greatly distended by a cyst of this character discomfort from the size is usually the sole complaint. Sometimes, in consequence of a temporary abatement of the obstruction, the pent-up fluid escapes, and the patient consequently may have observed that now and then large quantities of very pale urine have been voided. Occasionally, and without apparent reason, the sac becomes inflamed and suppuration results. Under such circumstances the tumour is commonly painful and tender to the touch, and a variation in the temperature of the body usually suggests the pro-

bable occurrence of this accident. Sometimes the change is accompanied by rigors. If the flow of urine from both kidneys is obstructed symptoms of uræmia will supervene, and death will speedily ensue.

Physical signs.—When the kidney is but slightly enlarged, or when both organs are affected, no physical signs are observed. In severe cases a somewhat soft and indistinctly fluctuating tumour, of greater or less size, is detected arising from the region of the kidney, and by careful palpation the colon can usually be felt as a collapsed tube traversing the tumour longitudinally.

Causes.—Obstruction of the ureter may take place at any spot from an impacted calculus, or from a tumour or inflammatory exudation compressing this excretory tube.

Treatment.—If the change is evidently due to the presence of a tumour which can be removed surgical interference is imperative, as both ureters are usually encroached upon under such circumstances. When it is uncertain what may be the cause of the obstruction, simple tapping may be resorted to if the size of the tumour demands interference. If suppuration has occurred, the abscess must be freely opened in the loin and drained.

Pyonephrosis

This consists in an accumulation of pus in the pelvis and calyces of the kidney. The fluid contained in a hydronephrosis may, in consequence of suppurative inflammation of the lining of the cyst wall, become purulent, and this change may arise spontaneously or be provoked by surgical interference. Pyonephrosis is, as a rule, produced directly by suppurative pyelitis, a disease which is probably always septic in its origin, and is liable to occur in cases of cystitis when the urine decomposes in the bladder. If in consequence of the mode of origin of the suppurative inflammation both kidneys are affected, death will almost certainly ensue ; should, however, one kidney only be infected, the pelvis and calyces may become filled with pus.

Symptoms.—This disorder is preceded by the symptoms and signs of the diseases of which it is invariably a sequel.

Physical signs.—A tumour which is, however, seldom large, can usually be detected in the renal region. If the tumour is of fair size fluctuation may be elicited, and by percussion and palpation the colon may be detected passing over it.

Prognosis.—If the conditions which cause this disease are recovered from, the pus may become inspissated and chalky, and a quiescent state of affairs may be thereby induced. Under such circumstances a patient may live for years without experiencing any ill effects apparently from the presence of a kidney which has thus become disorganised.

Treatment.—Our efforts primarily should be directed towards remedying those conditions which have induced the disease; and when these have been successfully dealt with, the question of nephrotomy may be seriously discussed.

Perinephric Abscess

As a result of simple inflammation, but more usually in consequence of suppurative nephritis or tubercular disease of the kidney, it sometimes happens that an accumulation of pus takes place in the areolar tissue in which the kidney is more or less completely embedded, and in this manner a perinephric abscess is produced. The pus may not, however, be confined to the immediate neighbourhood of the kidney, but may enter the sheath of the psoas muscle and travel to the groin, where it will present the characters of an ordinary psoas abscess.

Symptoms.—As the disease is almost invariably secondary to suppuration in the kidney, it is preceded, as a rule, by some symptom or sign which indicates disturbance of the urinary organs. There may be merely a frequency of micturition, or superadded to this pus may be detected in the urine. Whilst the destructive process is as yet confined to the tissue of the kidney itself, more or less local pain and tenderness may be complained of, and some evidence of the probable occurrence of suppuration may be observed. If tubercle is suspected, the lungs should be carefully examined. When the pus gains the sheath of the psoas muscle, it may cause the patient to keep the thigh somewhat flexed, as any attempt to extend it produces pain.

Physical signs.—If the matter is more or less circumscribed a swelling of a greater or less size will be detected in the lumbar region, and it will tend to point at the anterior free margin of the quadratus lumborum muscle. The pus may, however, burrow towards the groin, and produce a swelling which it may be difficult to differentiate from an ordinary psoas abscess.

Result.—On account of the character of the disease in the kidney which usually pro-

duces perinephric abscess, death ensues as a rule from exhaustion or uræmia.

Treatment.—The abscess should in the first place be freely opened and drained, and afterwards the question of nephrectomy may be discussed.

Cancer of the Kidney

Cancerous degeneration of the kidney takes place more especially during early and advanced life. Usually one kidney only is affected, but it is quite possible that the disease may, as in the case of the ovaries, appear simultaneously in both. The renal tissue is generally more or less uniformly transformed, and consequently the shape of the organ is as a rule fairly well maintained. Malignant disease of the kidney may result in the production of a tumour of great size.

Symptoms.—In some cases there are no marked symptoms ; in the majority, however, there is pain and occasional or constant hæmaturia. Sometimes the hæmorrhage is copious, and clots forming in the ureter or bladder may produce pain or vesical tenesmus.

Physical signs.—A somewhat soft tumour, resembling in outline the kidney and possessing a smooth surface, can almost invariably

be detected in the lumbar region. In growing forwards it carries with it the colon, the incorporation of which is of diagnostic worth.

Treatment.—It is doubtful whether at any time in cases of this group nephrectomy is commendable.

Rare Tumours of the Kidney

Dermoid cysts.

Adenoma.

Fibroma.—Small tumours of this class are frequently found in the kidneys, but it is alleged that large growths have also been observed.

Lipoma.—Growths of this nature are rarely detected in the kidney, but a bulky tumour may result from an increased formation of fat around this organ.

CHAPTER XXIV

TUMOURS OF THE ABDOMINAL WALL, AND EXTRA-PERITONEAL TUMOURS

Fatty Tumour in the Anterior Abdominal Wall

FATTY tumours of greater or less size are commonly detected in the anterior abdominal wall, but more especially towards the flanks.

They are seldom painful, and as a rule they grow slowly.

The consistence of a fatty tumour depends upon the amount of fibrous tissue it contains. If the fibrous tissue is scanty, the tumour may feel fluctuant ; but if it is abundant, the tumour may be very hard.

Dimpling is usually observed when the skin covering a fatty tumour is stretched.

Treatment.—If they worry or annoy in any way, then they should be removed.

Fibroma in the Anterior Abdominal Wall

It exceedingly rarely happens that a true fibroma develops in the anterior abdominal

wall; when, however, it does, it appears invariably to occupy a fairly central position, and is usually located between the pubes and umbilicus. It probably arises in the deep layer of the abdominal fascia, as it generally is somewhat closely incorporated with the peritoneum.

It forms a hard, regular, and saucer-like tumour.

Treatment.—The question of operation must be seriously considered.

Cellulitis of the Anterior Abdominal Wall

Inflammation of the cellular tissue of the anterior abdominal wall is occasionally observed after parturition, or abortion especially.

In a case which came under my observation, the patient, who was forty-five years of age and the mother of four children, had miscarried. For five weeks after the miscarriage she had complained more or less of pain in the abdominal wall, centrally between the pubes and umbilicus. Thereafter she detected a small lump, which fourteen days later was described thus:—"Occupying the anterior abdominal wall and extending to four inches above the pubes is a cake-like swelling, which measures transversely three

inches to the right and one and a half inches to the left of the umbilical line. Close to the pubes the swelling is tender, but elsewhere it is not sensitive. It is quite hard, and appears to be solid throughout. The temperature in the mouth is 99·2° F." The pelvic examination in this case was negative. Ten days after coming under my observation the phlegmon suppurated, and the induration eventually disappeared.

Hydrocele of the Round Ligament

This consists in an accumulation of serous fluid in the neighbourhood of that portion of the round ligament of the uterus which passes through the inguinal canal, and extends from the internal inguinal ring to the mons veneris. It is probable that this fluid is invariably located in a structure which is closely incorporated with the round ligament, and which during foetal life formed a peritoneal pouch. This pouch, which is analogous with the tunica vaginalis in the male, is as a rule obliterated in the adult; but in some cases it appears to remain more or less extensively pervious, and cystic swellings of greater or less size may consequently arise in its course. At any spot in this peritoneal structure between the internal inguinal ring

and the mons Veneris, fluid may accumulate, and the cystic tumour resulting therefrom may be rounded or elongated. It is always more or less movable, and although generally painless, it nevertheless occasionally becomes painful and tender to the touch.

Hydrocele of the round ligament must with care be differentiated from inguinal hernia. Recently I saw a patient with a hydrocole of the left round ligament, who for six years prior to coming under my observation had worn by advice a truss, but on account of the tumour becoming painful she sought further advice. The tumour, which was globular and cystic, slipped about readily in the tissues of the mons, and the fluid extracted from it was of a straw colour and resembled ordinary serum.

Treatment.—If the tumour is small and gives rise to no special inconvenience it may be allowed to remain as it is; if, however, it becomes painful it may be carefully incised, or the fluid may be removed by means of a trocar and cannula.

Extra-peritoneal Cysts in the Anterior Abdominal Wall

Cysts of greater or less size, and of doubtful origin, are occasionally observed in the

anterior abdominal wall. By some authorities it is alleged that many, if not all, of these tumours are developed from the urachus.

Solid Retro-peritoneal Tumours

According to my own experience, the solid tumours which should be thus classed as retro-peritoneal are usually similar in structure to the teratoma. They are probably always congenital, and may remain dormant for a greater or less length of time. In one or two cases growth appears to have been excited by gestation, as the tumours have been detected a few months after parturition. In one case the tumour, which was globular, smooth, and semi-fluctuant, appeared to arise from the sacrum. They may evidently, however, arise in any portion of the retro-peritoneal space. Occasionally they are lobulated on the surface, and more or less firm in consistence.

Treatment.—If, on abdominal section, it is evident that the tumour is a retro-peritoneal teratoma, it will probably be judicious to leave it alone.

Spinal Abscess

In association with caries of the spine a more or less marked abdominal tumour

may develop in consequence of an accumulation of pus in the cellular tissue on one or other side of the lumbar vertebrae. The abscess thus formed is generally lumbar or psoas, and it may attain an enormous size. Large abscesses produced by caries of the spine may occur without the patient complaining of any symptom which arouses the suspicion of disease of the vertebrae. The diagnosis may be rendered easy when curvature is detected.

The following is a fairly typical case taken from my out-patient history book. The patient, who was twenty-four years of age, had, seven months prior to coming under my observation, given birth to her first child. About one month after her confinement she noticed a fulness on the right side, and simultaneously she complained of a dull pain on this side on walking or standing, and also of stiffness in the right leg.

Physical signs.—The right half of the abdomen is occupied by a swelling, which projects forwards above the level of the left half. It reaches to the lower border of the liver, and here the liver dulness is continuous with the tumour dulness. The whole of the right half of the abdomen is dull to percussion. Fluctuation is ill defined.

Vaginally.—The cervix is located centrally, and the body of the uterus is felt in front. On the right side, close to the pelvic wall, is felt a cystic swelling, which is continuous with the abdominal swelling.

The pus may pass beneath Poupart's ligament on the outer side of the vessels, cross beneath the femoral sheath to the inside of the thigh, and here point and burst. Occasionally it travels a long distance down the thigh before it bursts.

Treatment.—The strength of the patient must be maintained as well as possible, and confinement to bed should be enforced. It is probably better to allow the abscess to burst; if, however, it is increasing enormously, or there are other indications which call for interference, then the abscess should be opened.

CHAPTER XXV

ABDOMINAL DROPSY IN WOMEN

*The Phenomena concerned in the Production
of Abdominal Dropsy*

THE capillary vessels are the seat of the phenomena of nutrition, absorption, and secretion, and it is to these structures we must look for an explanation of the occurrence of abdominal dropsy; it is unfortunate, however, that our knowledge of their anatomy is still very imperfect.

By means of a capillary network—the vessels entering into the formation of which are of an uniform size—the blood flows directly from the arteries into the veins. Regarding the lymphatic vessels, however, it is doubtful what is the exact relationship of these channels to the blood-stream. Some authorities, it would appear, believe that the lymphatic vessels are, through the medium of the serous spaces of the body, directly continuous with the minute arteries, and they affirm that the liquor sanguinis flows unin-

terruptedly through this varied channel. In consequence of a nerve influence the lymphatic and venous circulations are correlated, but it has not yet been satisfactorily demonstrated that the vessels thus implicated are structurally continuous, and it is highly probable that the fluid which finds its way from the blood-vessels into the lymph-stream passes from the capillaries by a process which is of a chemico-vital character.

The peritoneal sac is an enormous serous space, and according to Recklingshausen and others, it displays on its internal surface the open mouths of lymphatic vessels; but it is impossible to believe that it is studded also with the orifices of minute arteries from which is poured out directly that liquid which may under ordinary circumstances be collected from this cavity. It is true that this fluid resembles liquor sanguinis, but this cannot be accepted as proof that it has been discharged from open vessels. After careful scrutiny we are compelled rather to express the opinion that the physiological fluid of the peritoneum is separated from the blood by a membrane which is affected in a very decided manner by the operation. It is a fibro-albuminous liquid. It coagulates spontaneously, and in this respect it differs to a

more or less marked extent from that which accumulates and produces abdominal dropsy. This difference in behaviour is probably due solely to the presence of a larger quantity of water in the pathological than in the physiological transudation. It may be remarked that diluted blood behaves in a similar manner, for that drawn from the vein of an animal into which a very large quantity of water has been introduced does not coagulate.

Normally, the peritoneal fluid varies in amount according to circumstances. It is greatest after the ingestion of a good meal, and is reduced to a minimum during starvation. It never, however, exceeds a certain amount. It displays no tendency to accumulate, as the process of absorption keeps pace with that of exudation, and in this manner a state bordering as closely as possible upon equilibrium is maintained. Like all the other liquids of the body, this one is derived from the blood, but as rapidly almost as it passes from the blood-vessels it finds its way again into the circulation.

It is generally admitted that the lymphatics aid in removing the fluid which finds its way into the peritoneum, but it is more than probable that the capillaries play the chief part in this function. The walls of the

capillary vessels and the structures known as serous membranes are so constituted that the process of osmosis is readily displayed by them. For the carrying-on of this process, which consists in the diffusion of liquids, two fluids of a different character are necessary, and these must be separated by an organic membrane. Once effected, the interchange is maintained in consequence of a chemico-vital change occurring in the colloidal dia-phragm, but we are as ignorant of the source of origin of the peritoneal fluid in the first instance as we are of the blood itself. The osmotic action is exhaustible, but in the case of living membrane it is preserved so long as the physiological integrity of the tissue is maintained.

In discussing the phenomena concerned in the production of abdominal dropsy we must take into consideration—

1. The composition of the blood.
 2. The nature of the peritoneal fluid.
 3. The physico-chemical state of the intervening septum.
 4. The motion of the blood and the influence of variations in the blood-pressure.
1. *The properties of the blood and the manner in which change in the state of this fluid disturbs the phenomenon of osmosis.—*

In the living body the blood is a feebly alkaline liquid, but after extraction from the vessels it may become more or less acid in reaction in consequence of a lactic fermentation. It is an aqueous solution of organic and saline matters, and although it is enabled to fulfil its functions largely on account of the water which it contains, it nevertheless does not circulate in the body merely as an aqueous fluid. In consequence of the power which the organism possesses of adapting itself to circumstances, the quantity of water which is present in the blood may vary from time to time and to a marked extent, even without the physiological phenomena being thereby necessarily disturbed. If, however, a large quantity of this compound is more or less suddenly removed from, or added to, the blood, then changes of a very decided character may be induced. When a certain amount of water is injected into the aorta, those tissues which are prone to become oedematous are rapidly infiltrated by dilute liquor sanguinis, but it is noteworthy that this result is not so readily nor so markedly produced when the same quantity of water is injected into a vein. This disclosure no doubt is accounted for by the fact that the dilute blood in the latter case undergoes

considerable change before it reaches the capillaries, where the process of filtration takes place. In cholera the watery material of the blood may be rapidly reduced, and thus the tissues of the body generally may become more or less desiccated. It seldom if ever happens that the water in the blood is alone so inordinately increased that dropsy is thereby produced. During the progress of some wasting diseases, and in association with a watery condition of the blood, dropsy may develop, but it is evident that this phenomenon cannot in such cases be solely attributed to hydræmia, as the nutrition of the tissues generally is disturbed, and other conditions which favour the occurrence of oedema are also present.

The circulation is facilitated by the presence in the blood of the two organic compounds, albumen and fibrin. The albumen is held in solution by a feeble force, but its molecules nevertheless hinder the watery material of the blood from filtering through the walls of the vessels. If a solution of the white of egg is poured upon an organic diaphragm, the passage of the aqueous fluid through the membrane is retarded by the molecules of albumen. In so far as the process of filtration is concerned, it would appear that the be-

haviour of the blood is to some extent dependent upon the albumen which it holds in solution. In many cases of Bright's disease dropsy is more or less rapidly induced, and its occurrence, which is attributable to an alteration in the physical state of the blood, is due more especially to a diminution of albumen, as the transudation from the blood-vessels is thereby correlative increased. If in kidney disease there is not only a loss of albumen from, but a detention of water in the blood, then it is evident that through the co-operation of these two causes the production of dropsy will at least be facilitated.

In health the composition of the blood is well maintained ; when, however, that relationship which should exist between the water and the albumen which it holds in solution is unduly disturbed, then the physico-chemical conditions under which the circulation is carried on are disordered, and dropsy may thus ensue.

Fibrin is an albuminous substance which exists in the blood in a liquid state, and like albumen this compound hinders the transudation of the watery material from the blood. It aids especially in suspending the corpuscles, and facilitating thus the transit of these bodies it lessens the possibility of the

vessels being obstructed by them. It is evident that in the body fibrin may be transformed into a substance which is readily soluble in water and very similar to albumen, but it has not yet been demonstrated that this conversion may take place during the evolution or in consequence of any morbid state. In many diseases the fibrin of the blood may be greatly augmented, but in a few only is it diminished. It is possible, however, that dropsy may occasionally be attributed to an alteration in the character or diminution in the proportion of fibrin.

The red blood-corpuscles display a great affinity for water; when, therefore, the number of these bodies is defective the metabolic processes of the body generally are disordered, so that directly and indirectly dropsy may thus be produced.

2. *The peritoneal fluid.*—If the fluid which finds its way into the peritoneum under ordinary circumstances is regulated by an action which is of the nature of osmosis, then it is evident that in discussing the question of derangement of this vital process we must take into consideration not only the character of the intra-vascular, but also of the extra-vascular fluid. The mode of origin of the extra-vascular liquid in the first

instance is obscure. It may be produced by a liquefaction of the primitive cells of the peritoneum, or it may be evolved like the various tissues of the body in the normal course of events. However begotten, it must play a very important part in regulating and maintaining the physiological phenomenon we are now investigating.

At the time of pollination bees are often attracted to certain plants for the purpose of fertilisation by the presence of a saccharine juice which is excreted by structures called nectaries. Regarding the manner in which this fluid is in the first instance produced we know nothing, but it is evident that the excretion when originated is maintained to some extent by a process which is of the nature of osmosis. The insects visiting these plants may remove this sugary liquid without the secreting structure being thereby disturbed, but it is remarkable that if the surface of a nectary is brushed with water the secretion is forthwith arrested, and it may be held in abeyance until a small particle of sugar is placed upon the washed surface, when it is again established. In this case, it would appear, the saccharine material on the external surface of the nectary influences in a very decided manner the

chemico-vital changes which induce the ex-osmotic current.

In dropsy of the peritoneum it is occasionally observed that when the fluid is removed by abdominal section the operation influences beneficially in some inexplicable manner the osmotic action, and the fluid thereafter shows no disposition to re-accumulate, in spite of the fact that it may have been impossible at the time of operation to remedy the disease which originally caused the ascites. In cases of this description it is quite possible that once the harmonious relationship which should exist between the process of transudation and that of absorption is disturbed, the want of harmony may be maintained in consequence of the character of the fluid, and in order to moderate or check the chemico-vital action concerned in the production of this kind of ascites it is merely necessary to remove the fluid, which is probably now the exciting cause of the phenomenon.

The normal fluid of the peritoneum is less alkaline than the blood, but it is impossible to state what are the differences between these two fluids which favour the process of osmosis in the body, although we are justified in assuming that the chemical action inside

and outside the vessels is different not only in degree but in kind.

3. *The chemico-vital state of the intervening septum.*—Primarily the fluids concerned in the phenomenon of osmosis may be practically normal, but the rate of transudation may be increased or the power of absorption diminished in consequence of some alteration in the chemico-vital state of the separating membrane. In this inquiry the capillary wall is that more especially which attracts attention, although it is more than probable that the epithelioid cells which enter into the formation of the peritoneum play a more or less important part in the processes which we are now discussing. In the present imperfect state of our knowledge we are unfortunately unable to deal otherwise with the serous membrane than from the physical standpoint.

At one time it was supposed that the process of absorption was effected solely by the lymphatics, whereas it is now generally believed that the blood-vessels fulfil this function too. Whichever vessels participate in the operation, it is evident that the fluid to be absorbed should be placed in as immediate contact as possible with the interested vessels. In the case of the skin

the power of absorption is indeed feeble, but it may be made more active if the cuticle is removed. Under ordinary circumstances the peritoneum is a delicate structure, but occasionally it becomes converted into a thick and skin-like membrane, and the process of absorption may consequently be more or less completely interrupted.

When the peritoneum generally is thickened, the lymphatic openings in this sac may be constricted and even occluded, and in this way the occurrence of dropsy may be favoured.

The chemico-vital state of the capillary wall is to a more or less marked extent determined by the sympathetic nerve, and by its influence the harmonious relationship which under ordinary circumstances exists between the process of transudation and that of absorption may be so disturbed that dropsy may result. When we ligature in a healthy animal the principal vein of a limb, we interfere with the return of blood from the part, but oedema is not a necessary sequence. If, however, we cut the vaso-motor nerve of an extremity, then the interstitial meshes in the affected area are forthwith distended by a liquid which has transuded from the blood-vessels. By this operation we have

destroyed that tone of the vessels which is so essential for the maintenance of those physico-vital processes which are for ever going on, and whilst we have increased the permeability in the direction of the exosmotic current, we have correlatively diminished it from without inwards.

4. *The motion of the blood and the influence of the intra-vascular pressure.*—Through the agency of the nervous system the capillary wall may be rendered more or less pervious, but apart from this vital phenomenon the material of which these vessels are constituted is so disposed that filtration takes place with great readiness. Under such circumstances it is apparent that—other things being equal—the rate of diffusion will depend upon the duration of the contact. This is, in fact, what may be observed. If the capillary circulation is impeded, it will be remarked that the fluid which transudes from the vessels is augmented, whilst the rate of absorption is at the same time correlatively diminished; whereas the transudation is lessened when the circulation is accelerated, and the process of absorption is simultaneously increased. It is, therefore, evident that under ordinary circumstances the phenomenon of osmose as it is displayed

by the minute blood-vessels is materially affected by the perpetual motion of the blood, since the exosmotic and endosmotic currents vary respectively in an inverse and direct ratio according to the rate of the circulation.

It is generally believed that dropsy may be caused by an alteration in the relationship of the arterial and the venous pressure. In the vessels the blood is subjected more especially to two kinds of pressure,—a constant, which is maintained by the elastic force of the arteries; and an intermittent, which is due to the muscular contraction of the heart. Under certain circumstances, however, it has been observed that these two pressures vary inversely. If the constant pressure is increased, then the cardiac may be diminished. It is, therefore, evident that through the influence of the nervous system the blood-pressure may at any given portion of the body be moderated, and we are convinced that the hæmo-dynamic phenomena are not regulated by an unique cause. In the present imperfect state of our knowledge it is difficult to say to what extent the process of osmose may be affected by pressure, as the phenomenon is not produced by influences of a mechanical character, but

is dependent upon changes of a chemico-vital nature.

Signs of Fluid in the Peritoneum

When fluid accumulates in the peritoneum, it is, as a rule, free to move about in the abdominal cavity in accordance with the law of gravitation ; but in a few rare cases, and more especially when the pelvic peritoneum is the source of origin of the disturbance, it is completely confined by adhesions. It is, therefore, evident that the physical signs will necessarily vary according to the circumstances under which the liquid effusion takes place.

Free fluid is characterised by the following signs :

1. There is enlargement or swelling of the abdomen, and, unless the effusion is excessive, the configuration of this portion of the body is so affected by the fluid that it is changed by every alteration in the position of the patient. As the patient lies on her back, the anterior abdominal wall may or may not be prominent according to the amount of fluid present, but there is generally a more or less marked bulging of both flanks. If the abdomen is greatly distended, the navel is protruded, and the superficial veins of

the trunk generally are more visible than usual.

2. The note elicited by percussion over the situation of the fluid is dull usually, but this is not an invariable sign, as the intestines may, in consequence of omental and other adhesions, fail to rise to the surface of the fluid, and consequently an area of resonance, of greater or less extent, may be detected where dulness would be expected. In the flanks this variation is occasionally observed, and it may be due to the fact that the large bowel, when more or less distended, may resist the weight of the fluid. Acted on by gravitation, the fluid finds its way always to the most dependent part of the abdominal cavity, and thus the area of dulness varies according to the position of the body at the time of examination. In cases of general thickening of the peritoneum, with or without malignant disease, the intestines may be extensively matted together and fixed at any location in the abdomen, and in this manner the usual signs of dropsy may be perverted. In the majority of cases the fluid is thin, and under the influence of gravitation it readily displaces the bowel, and rapidly falls to the most dependent part of the serous sac; if, however, as happens in many cases of rup-

tured ovarian cyst, it is thick and jelly-like in consistence, then the intestines so impede its progress, when acted on by gravitation, that a greater or less length of time must elapse before the phenomenon arising from change in the position of the body can be revealed.

3. There is fluctuation. This sign, which is induced by tapping suddenly on one side of the abdomen over the seat of the fluid, is appreciated by placing the fingers of the other hand on the opposite side of the abdomen about the spot where the wave thus engendered would be reflected. The undulations of a thin are more distinct than those of a thick fluid ; hence the ease or difficulty experienced in detecting fluctuation in abdominal dropsy will depend not only upon the quantity, but upon the character of the fluid.

4. By pressure the presence of a small as well as a large quantity of ascitic fluid may be detected when the abdomen contains a new growth. If by dipping, the finger tips drive suddenly and firmly the abdominal wall before them ; the fluid is displaced, and in this manner the co-existence of one or more tumours may be determined.

5. *Dyspnoea*.—If the abdomen is greatly

distended, whether in consequence of fluid alone or in part by an inflated condition of the bowel, then more or less difficulty of breathing may be observed, and the patient may be unable to rest in bed unless the shoulders are well propped.

When the fluid which is poured out is confined, as happens in the so-called encysted serous peritonitis, then the physical signs which are observed are similar to those which belong to any cystic tumour. The percussion note over the situation of the fluid is dull, and this dulness is not materially affected by changing the position of the patient. Fluctuation may be detected.

CHAPTER XXVI

ABDOMINAL DROPSY (*continued*)*Diseases in Association with which Fluid may accumulate in the Peritoneum*

1. *Disease of the kidneys.* — Abdominal dropsy may develop during the course of the following diseases of the kidneys :—(a) Acute Bright's disease; (b) chronic Bright's disease; (c) parenchymatous degeneration—a disease which is apt to arise during pregnancy, and which is, in my opinion, of a nervous origin, and may eventually be found to be due to some disturbance in or about the floor of the fourth ventricle.

In all these diseases the increased transudation which takes place from the vessels is due to an alteration in the physical state of the blood, and consequently the subcutaneous areolar tissue of the body generally is extensively infiltrated, as well as the various serous cavities. The peritoneal effusion is, in fact, but a portion of a general dropsy, which is

characterised by the presence of albumen, and possibly of blood in the urine, and by a pallor and pastiness of the countenance. Before it is evident that fluid has accumulated in the abdominal cavity oedema of the feet and legs will have been observed, and often the areolar tissue of the face is that which first reveals the change.

During the evolution of renal dropsy the serous membranes of the body are especially prone to inflame, and it is quite possible that occasionally symptoms of peritonitis may co-exist with those of renal disease, and the ascites may under such circumstances be due to the peritoneal inflammation, and not to the disease of the kidneys.

2. *Diseases in the chest.*—The diseases of the chest which are likely to produce ascites are those which impede in a more or less marked manner the return of the blood to the heart, so that this fluid, which is already impoverished and is consequently more liable to part with its watery material, is kept a longer time in contact with any given portion of the filtering membrane, a condition of affairs which favours transudation and hinders absorption. Diseases of the mitral valve and tricuspid incompetence—whether dependent upon mitral disease, chronic bronchitis, or

emphysema—are more apt to produce this result than lesions of the aortic valves. Any tumour which compresses the inferior vena cava above the hepatic vein will tend in like manner to cause abdominal dropsy.

The fluid which accumulates in the peritoneum under such circumstances is, as in the case of renal disease, but a portion of a general dropsy, and before ascites can be detected there is well-marked oedema of the lower extremities. The anasarca which is due to valvular disease of the heart or chronic disease of the lungs is noticed first in the feet, and gradually proceeding upwards the legs may attain an enormous size before there is evidence of fluid in the peritoneum. The ascites which is thus caused is characterised by dyspnoea before the abdominal distension can have induced such, and by the physical signs of cardiac or pulmonary disease.

If the impediment to the circulation is due to the pressure of a tumour on the vena cava the anasarca may develop rapidly, and, although the tumour may not be detected, the existence of such may be surmised from the indications of pressure upon other parts, and from the increase in the size of the superficial veins of the chest and abdomen.

3. Diseases of the liver or of the portal vein.—The blood which has passed through the capillaries of the spleen, intestinal canal, stomach, pancreas, and mesentery is not forthwith returned to the general circulation, but is collected in the vena porta, and, after being subjected to another capillary circulation in the liver, it is transmitted by the hepatic vein to the vena cava. It is therefore evident that, independently of the general circulation, and in consequence of some obstruction to the portal circulation, the abdominal vessels may become more or less engorged, and as this condition of affairs favours the transudation of serum and hinders the process of absorption, fluid may accumulate in the peritoneum. The exudation which takes place under such circumstances begins in and is, in the first instance, confined to the abdominal cavity, but eventually the ascitic fluid may so compress the vena cava that oedema of the lower extremities is thus secondarily induced. In cirrhosis or cancer of the liver it occasionally happens that the vena cava as it lies in its groove in the posterior border of the liver becomes more or less constricted, whilst the portal circulation, too, becomes obstructed, and consequently there may be produced almost simul-

taneously dropsy of the peritoneum and anasarca of the feet and legs.

The ascites which results from obstruction in the portal vein or in its capillary ramifications is accompanied by enlargement of the spleen, by disturbance of and haemorrhages from the stomach and bowel, as well as by more direct indications of the existence of hepatic disease, such as enlargement, contraction, irregularities on the surface, and tenderness of the liver.

The diseases of the liver which are most likely to cause ascites are—

- (1) Cirrhosis.
- (2) Syphilitic hepatitis.
- (3) Cancer.
- (4) Amyloid degeneration (occasionally).
- (5) Inflammation of the portal vein.
- (6) Thrombus of the portal vein.

(1) *Ascites from cirrhosis of the liver.*—Of all the causes of ascites from obstruction of the portal circulation, cirrhosis is undoubtedly the commonest. The size of the liver is not always under such circumstances reduced, but may, in fact, be greatly increased. It is usually evident that the patient has been addicted to a free use of alcohol, and the symptoms which we are accustomed to attri-

bute to a constant and liberal imbibition of spirituous liquors are as a rule more or less marked.

(2) *Syphilitic hepatitis*.—Syphilitic disease of the liver is occasionally, and especially in children, a cause of abdominal dropsy. The organ may be enlarged, but usually it is contracted from the first. It is generally irregularly nodulated, and the evidences of constitutional syphilis in the teeth or eyes may be observed.

(3) *Cancer*.—In the majority of cases of cancer of the liver, the quantity of fluid in the peritoneum is small compared with that which is detected in cirrhosis. In more than half the cases there is no jaundice. When, however, this sign is present, it is strong evidence in favour of carcinoma. The liver is usually much enlarged, and on palpation the indurated margin of the organ may be felt, and nodules with depressed centres, which are pathognomonic of the disease, may be detected. There is more or less rapid loss of flesh, and the patient presents a cachectic appearance. When there is considerable ascites we may by "dipping" displace the fluid and convince ourselves of any increase in the size and consistence of the liver.

(4) *Amyloid degeneration.*—Occasionally abdominal dropsy is observed in association with amyloid degeneration, but the effusion is probably due more to the condition of the blood than to obstruction of the portal circulation, especially as there is often a more or less marked œdema of the lower extremities as well. The liver change is secondary to other exhausting diseases, such as syphilis, tubercle of the lung, and prolonged suppuration, and there is invariably more or less evidence of the kidneys being in a state of amyloid degeneration too.

(5) *Inflammation of the portal vein; pylephlebitis.*—This appears to be a rare primary affection.

(6) *Thrombosis of the portal vein.*—Coagula may form in the vena porta and cause ascites. The thrombus may be secondary to such diseases of the liver as cancer or interstitial hepatitis. Cases are on record in which calcification of the wall of the portal vein has converted the vessel into a narrow rigid tube, the lumen having then become suddenly blocked by clot. Tumours of the pancreas and omentum may so compress the vena porta that a coagulum may form at the seat of constriction.

If the vein is suddenly occluded, ascites

rapidly develops; and if paracentesis is performed, the fluid re-accumulates very quickly.

4. *Tuberculosis of the peritoneum.*—Tuberculosis is a common cause of peritonitis, and in many cases it appears to develop in the peritoneum as a primary disease, although it may be secondary to tuberculosis of the vertebræ or of the lymphatic glands. It may result in the formation of extensive adhesions without any accumulation of fluid, but occasionally ascites is more or less rapidly induced. The usual signs of free fluid in the peritoneum may in such cases be perverted, as the intestines may be matted together and fixed at any location in the abdominal cavity. The fluid accumulation may under such circumstances even appear to be encysted, and occasionally it happens that this variety of abdominal dropsy is mistaken for an ovarian cyst. In some cases there is fever, whilst in others the temperature is normal, and there may or may not be evidences of tubercular disease in other parts of the body. Not infrequently there is diarrhœa, and more or less pain of a dull aching character in the abdomen may be complained of. Amenorrhœa is often observed.

The following cases were good examples of fluid in the peritoneum from tubercle.

CASE 1.—Elizabeth L—, aged 18 and single, began to menstruate at the age of thirteen, and the discharge, which has usually lasted three days, had recurred regularly until five months ago. During the last five months there has been complete amenorrhœa, and during this same period patient has observed that the abdomen has been gradually increasing in size, and that occasionally she has complained more or less of aching pain in the belly and back. Three months ago there was anasarca of the left foot and leg, but this disappeared after continuing for two weeks only. She has not lost flesh, and she has neither complained of bladder nor rectal trouble.

The temperature is 100·6° F.

Physical signs.—The abdomen is distended and tense. The percussion note is dull from the pubes to two inches above the umbilicus, and the area of dulness extends laterally on each side to a line drawn vertically from the anterior superior spine of the ilium. Both flanks are resonant. Fluctuation is readily elicited. On palpation a small nodule is detected in the abdomen on the left side at a

spot above the anterior superior spine of the ilium, and midway between it and the linea alba. At the upper limit of the dulness and on the left side is felt a somewhat solid body, which appears to be agglutinated bowel.

The uterus is low in the pelvis. The os looks downwards, and the body is felt anteriorly and on the right side lying on the pelvic floor. Fluctuation is conveyed from the abdomen to Douglas's pouch. The bladder was emptied by the catheter.

Under treatment with good food, quinine and iron, iodide of potassium and cinchona, syrup of the iodide of iron, and cod-liver oil, the abdominal swelling gradually disappeared, and menstruation was re-established. Twelve months later the patient was seen, and she was then in good health.

CASE 2.—Charlotte M—, aged 23 and single, began to menstruate at the age of twelve, and the discharge, which has usually lasted three days, recurred regularly until eight months ago, since which time there has been complete amenorrhœa.

At the age of ten patient had swellings in the neck, but these gradually subsided without further trouble.

Two years ago the glands on the right

side of the neck became greatly enlarged, and eventually they suppurated. During this period she complained constantly of a feeling of lassitude. For eight weeks she has experienced a dull aching pain in the belly, and during the last six weeks the abdomen has increased in size. Diarrhoea, especially in the morning, has been troublesome for fourteen days. The temperature is 101° F.

Physical signs.—The abdomen is greatly distended, its girth at the umbilicus is thirty-six inches. The evidences of free fluid in the peritoneum are distinct. There is slight œdema of both legs.

In spite of treatment the abdomen became more and more distended, and paracentesis was performed—fourteen pints of fluid being drawn off; but the patient died from exhaustion after having been under observation three months.

CASE 3.—Annie G—, aged 16, began to menstruate at the age of fourteen, and since then the discharge has recurred regularly. She was last “unwell” fourteen days ago.

For twelve months patient has observed that her abdomen has been increasing in size, and during this time she has complained more

or less of pain in the belly. There is no swelling of the legs, and she has not lost flesh.

The temperature is normal.

Physical signs.—The abdomen is much distended. The girth at the umbilicus is thirty-eight and a half inches. In the mid-abdominal line the percussion note is dull from the pubes to a point midway between the umbilicus and the ensiform cartilage. Both flanks are resonant. Fluctuation is readily elicited. By rectal examination nothing unusual was noted in the pelvis.

Abdominal section was performed. The fluid which escaped (thirteen pints) was of a straw colour, and contained flakes of lymph. The intestines were matted together and fixed in the upper and posterior part of the abdomen. The peritoneum, which was much thickened, was nodular, and presented a grey appearance. From the parietal peritoneum on the left side a nodule of about the size of a hazel nut was removed, and on cutting into this growth a cheesy-looking material was extruded. The patient recovered from the operation, but died nine months later.

5. *Cancerous diseases in abdomen and pelvis.*

—As a primary disease, cancer of the peritoneum is occasionally observed. It invari-

ably results in the production of ascites, and the fluid, which is usually rapidly effused, becomes often more or less tinged with blood. Edema of the lower extremities is as a rule sooner or later developed, but the amount may never be great. Abdominal pain may, for a greater or less length of time, have been complained of before fluid can be detected in the peritoneum. Primary cancer of the peritoneum is apt to appear late in life, to be accompanied by emaciation, and to run a rapid course. Of all the organs which possess a peritoneal covering the ovaries are those which are most liable to produce ascites when they become affected by cancer, and in many of these cases the fluid accumulation takes place without the omentum or peritoneum generally being infected. When cancer appears in the ovary as a primary disease it is remarkable that the omentum may be extensively invaded by secondary growths before any trace of the disease can be detected in the peritoneum elsewhere, except in the immediate neighbourhood of the ovary. The omentum, it would appear, absorbs with avidity any material which gets into the peritoneal sac. In cases of ruptured cyst of the ovary, in which the extruded material is like calf-foot jelly, I have occasionally remarked

that the omentum is, in consequence of the presence of this fluid, converted into a colloid mass which presents a malignant appearance, but is evidently not of a very malignant nature, as it may sensibly decrease in size, and may possibly even disappear entirely when the remnants of the cyst and extravasated fluid are removed. This change may, however, take place in the omentum whilst the ovarian fluid it still encysted, and I am of opinion that it is caused by some peculiar substance which exists in this jelly-like fluid, and which may be transmitted by the phenomenon of osmose from the interior of the cyst to the omentum.

When fluid accumulates in the abdominal cavity in association with malignant disease, more or less pain in the belly is usually complained of, whether the omentum and peritoneum are infected or not. Emaciation may or may not be a marked symptom, and œdema of the legs may supervene. The temperature is often erratic, being sometimes subnormal and sometimes high.

The following cases illustrate fluid in the peritoneum in conjunction with cancerous diseases.

CASE 1. *Cancer of the peritoneum; rapid development of ascites; death within five months after the first probable symptom of the disease.*—Jane M—, aged 66 and married, has borne three children. For three months patient has complained occasionally of sickness, but more or less constantly of a dull aching pain in the belly, and during this same period the abdomen has gradually increased in size. Eight weeks ago the feet and legs began to swell, and during the last four or five weeks she has lost flesh.

Physical signs.—The abdomen is greatly distended. The girth at the umbilicus is thirty-nine inches. The fluid is free. On palpation no nodules nor new growth can be detected. Paracentesis was performed, and about two gallons of blood-stained serum were drawn off. After the fluid was removed palpation failed to detect any cancerous nodules or abnormal mass. Rapidly the fluid re-accumulated and paracentesis was repeated, but the patient died from exhaustion two months after the first tapping.

CASE 2. *Rapid production of ascites; solid cancerous transformation of both ovaries; necropsy.*—Emily S—, aged 41, and married sixteen years, has had five children and one

miscarriage. The last child was born three years ago, and the abortion occurred two months before patient came under observation. Since the miscarriage the abdomen has rapidly increased in size, and pain of a dull aching character in the belly has been complained of. Before seeing me she had been tapped four times, and on each occasion she states that more than two gallons of fluid were drawn off. Patient is much emaciated. There is no oedema of the legs and no albumen in the urine. The abdomen is enormously distended. The girth at the umbilicus is forty-two inches. The fluid is free in the peritoneum. Paracentesis was performed, and one gallon and a half of straw-coloured serum was drawn off. On palpation two solid swellings were now detected, one in each iliac region, and by bimanual examination they were considered to be ovarian tumours, and they were freely movable. At the time of this tapping the patient was very weak, and she died two days later from exhaustion.

Necropsy.—Both ovaries were transformed into solid malignant growths, and each was about five inches in diameter. Both possessed good pedicles, and could have been removed by abdominal section had the con-

dition of the patient permitted of this operation. There was no evidence of secondary deposit.

CASE 3. Fluid in the peritoneum; primary cancer (malignant adenoma), solid, of both ovaries; secondary cancer of omentum.— Emily N—, aged 53, a widow, has had one child. She ceased menstruating seven years ago. For twelve months patient has observed that her abdomen has been increasing in size, and during the last four months she has complained more or less of pain all over the belly. There is no œdema of the legs. The temperature is normal, and there is no albumen. The abdomen is prominent, but not tense. The girth at the umbilicus is thirty-six inches. The signs of free fluid in the peritoneum are well marked. No nodules nor abnormal masses are felt on palpation. The vaginal examination is negative.

Abdominal section.— Five pints of a deep amber-coloured fluid escaped from the peritoneum. There were no lymph flakes. Both ovaries were converted into malignant growths (solid) of the size of small hen eggs, and the surface of these tumours presented an epitheliomatous appearance. The posterior layer of each broad ligament was so

infiltrated with the new growth that the tumours could not be removed. The omentum was converted into a sago-like mass.

The fluid re-accumulated in the peritoneum, dropsy of both legs ensued, and death occurred six months after the abdominal operation.

CASE 4. Fluid in the peritoneum; primary malignant disease of right ovary (cystic); secondary deposits in omentum, liver, and pleuræ.—Harriet H—, aged 48 and single, ceased menstruating one year ago. Three months ago patient began to complain of soreness in the abdomen, and about this time she detected a small lump in the right iliac region. Since the pain was first complained of the abdomen has gradually increased in size. Patient is well nourished. She is unable to move much on account of dyspnœa, and she cannot lie for any length of time in one position, but she is most comfortable when lying on the right side. The abdomen is greatly distended. The girth at the umbilicus is forty inches. The skin of the belly is tense and shining. In the mid-line of the abdomen the percussion note is dull from the pubes to the umbilicus. Both flanks are resonant. In the lower half of

the abdomen there is an obscure sense of fluctuation.

The vaginal roof is occupied by a hard swelling, which has pushed the cervix against the pubic bone. This swelling is fixed.

Soon after coming under observation both legs became œdematosus, and fluid accumulated slightly in both pleuræ. As the abdominal distension became distressing, a trocar was inserted midway between the pubes and umbilicus, and by means of the cannula fifty-two ounces of a dark greenish fluid were drawn off. This fluid was alkaline, and its sp. gr. was 1020. It contained paralbumen and peptone, and became solid on boiling. Three weeks after this tapping the patient died suddenly. Throughout the seven weeks that she was under my observation the temperature varied from 97·4° F. to 101° F.

Necropsy.—The peritoneum contained four pints of straw-coloured serum. The right ovary was converted into a thick-walled cyst, which lay slightly in front of and was adherent to the uterus. The summit of this tumour reached almost to the umbilicus, and the fluid it contained was similar to that which I had drawn off during life. The base of this cyst was firmly adherent to the pelvic floor, and several malignant nodules

were detected in the peritoneum close to the tumour. In the interior and at the base of this cyst was a soft malignant growth of about the size of the fist. On the left side was another ovarian cyst of about the size of a cocoa-nut. This cyst had developed in the substance of the left broad ligament, and the sigmoid had to be cut from its upper border. This cyst was thick-walled ; it contained broken-down blood, but no cancerous growth. The body of the uterus was closely incorporated with both ovarian tumours. The omentum contained a large cancerous growth, and there were cancerous nodules in the liver and pleuræ. There was fluid in both pleuræ ; that in the right was straw-coloured, whilst that in the left was blood-stained.

CASE 5. *Fluid in the peritoneum ; fungating malignant adenoma of ovary.*—Jane W—, aged 30 and married thirteen years, has had two children, the last eight years ago. Patient menstruates regularly, and was last unwell seven days ago. For nine months the abdomen has been gradually increasing in size, and at first it appeared to be more prominent on the left side. She has never complained of any pain in the belly, and there is no œdema of the legs.

The abdomen is prominent but not tense. In the mid-line there is dulness from the pubes to one inch above the umbilicus. The right flank is resonant and the left dull, but the left becomes resonant when patient lies on her right side. Fluctuation is well marked. No abnormal mass can be detected by palpation.

Vaginally: the uterus is drawn bodily towards the left wall of the pelvis, and immediately behind the cervix is felt a small movable swelling which has a reticulated feeling.

Abdominal section.—The peritoneum, which was studded universally with miliary nodules (cancerous), contained about eight pints of serous fluid, which was deeply tinged with blood, and in it floated large flakes of lymph. The pelvis was occupied by a small semi-cystic tumour of the left ovary, through the peritoneal covering of which was sprouting an adenomatous growth of a malignant nature. The tumour had contracted two adhesions to the small bowel. It was removed, but the patient died twelve hours after the operation from shock.

CASE 6. *Fluid in the peritoneum ; medullary cancer of both ovaries and of the left Fallopian*

tube, rapidly fatal; necropsy.—Mary C—, aged 30 and single, complains of pain in and of swelling of the belly, and of a constant haemorrhagic discharge from the vagina. Two months ago patient began to complain of pain all over the abdomen, and, although she had menstruated as usual fourteen days previously, she remarked that there was a haemorrhagic discharge from the vagina, and this discharge has continued more or less every day since. During the last six weeks the belly, which at first appeared to be more prominent on the left side, has rapidly increased in size generally.

The abdomen, which is greatly distended and tense, is largely tympanitic. Both flanks are dull. In the left iliac region is felt a solid body, and between it and the abdominal wall anteriorly there is a small quantity of ascitic fluid. The hymen is intact, but *per rectum* there is felt a nodular mass which is apparently continuous with the swelling noted abdominally in the left iliac region. There is no oedema of the legs.

This patient rapidly lost flesh, and the temperature, which was often normal, rose occasionally to 100° F. After being under observation four weeks she died from exhaustion.

Necropsy.—The abdominal cavity contained a quantity of clear amber-coloured fluid. The peritoneum and omentum were studded with small malignant nodules. The left ovary was transformed into a slightly convoluted tumour of about the size of a full-time foetal head. It was somewhat soft in consistence, and was adherent to the anterior abdominal wall close to the inguinal canal. The Fallopian tube on the left side was quite distinct, but it was infiltrated with cancer. The right ovary, which was about three times its natural size, was also cancerous. The uterus was adherent to both tumours. The peritoneum of the bladder was studded with malignant nodules.

Although in the majority of the cases of cancer of the ovary fluid is found in the peritoneum, it nevertheless occasionally happens, as in the following case, that the disease develops without producing ascites.

CASE 7. *Cancer of the ovary; faecal matter passed per urethram; secondary cancerous nodules in peritoneum and liver; no ascites.*—Elizabeth T—, aged 43 and married fourteen years, has never been pregnant. She was last unwell seven weeks ago, but prior to this she had been perfectly regular, and

had lost as usual. Eleven weeks ago, whilst menstruating, patient began to complain of pain in the belly, especially in the left iliac region; and this pain, which is sometimes severe, has continued more or less ever since. For one month faecal matter has been passed *per urethram*. No pain is experienced during the time of micturition, but towards the end of this act the pain is most intense for a few seconds. During the last four weeks patient has also remarked that the ingestion of food induces there and then a pain which shoots down the vagina. Faecal matter is voided only from the lower bowel now when an aperient is taken.

An examination of the abdomen reveals nothing but tenderness—in the left iliac region more especially. By vaginal examination the cervix is located rather on the right side. On the left side and in front of the cervix is felt a hard swelling, but by bimanual examination this mass appears to be partially cystic. It is of about the size of a cocoa-nut. The urine which was drawn off by catheter was faecal in appearance and odour. The temperature is normal, and there has been no marked loss of flesh. This patient died after having been under observation six weeks, seventeen weeks after the first

symptom of the disease, pain, was observed.

Necropsy.—There is general peritonitis, and there are nodules of cancer in the peritoneum and liver. The omentum covers the whole of the intestines, and is firmly adherent to a mass in the pelvis on the left side. The walls of this pelvic mass (which proved to be a cavity) are grey in appearance. The cavity of this pelvic swelling contained faecal matter, and the left ovary in a state of cancerous degeneration. This cavity communicated with the sigmoid and with the bladder. A portion of the small gut was adherent to the pelvic swelling. The uterus is normal. The right ovary contains a small nodule (cancer?) of about the size of a currant. The lumbar glands are enlarged. The peritoneum contained practically no fluid.

6. *Innocent tumours of the ovary—cystic and solid—in which the peritoneal covering has (a) become thickened by chronic inflammation, (b) undergone fatty degeneration, or (c) become infiltrated by lime salts.*—Independently of any cancerous element, fluid may accumulate in the abdominal cavity in consequence of certain changes which are proceeding, or have taken place, in the peritoneum covering any of the various tumours

of the ovary. When the ovary becomes transformed into a cystic or solid tumour of an innocent nature there is, as a rule, no abnormal variation in the amount of the peritoneal fluid, and this is remarked even when the new growth has contracted more or less extensive adhesions with the gut, omentum, and peritoneum generally. It frequently happens, however, that ascites develops in association with these tumours when the peritoneum which covers them becomes disorganised, and the following are the structural changes which invariably produce this result.

- (a) Chronic inflammation of the serous membrane covering the tumour.
- (b) Fatty degeneration of the serous membrane covering the tumour.
- (c) Calcareous infiltration of the serous membrane covering the tumour.

(a) Chronic inflammation.

The variety of inflammation which is most likely to produce ascites is not that which results in the formation of adhesions, but that which causes the peritoneal covering of the tumour to become greatly thickened. The membrane is not as a rule uniformly affected by this disturbance, and conse-

quently the surface of the tumour is often more or less markedly uneven. Distinctly elevated patches with well-defined and even abrupt margins are sometimes observed, and occasionally the indurated tissue presents a milk-white appearance. This form of inflammation attacks the covering of solid as well as cystic tumours. It is due to some local cause, but it evidently is not induced by friction. If both ovaries have been converted into tumours, then the external covering of both is as a rule similarly affected, and the parietal peritoneum generally is invariably more or less thickened also. It is impossible to express at present any opinion regarding the manner in which the fluid accumulation takes place under such circumstances. Primarily it is no doubt dependent upon the change in the peritoneal covering of the tumour; and it is remarkable that although the parietal peritoneum is often greatly thickened in cases of this description, it nevertheless seldom if ever happens that the fluid re-accumulates in the abdominal cavity after the tumours are removed. The liquid which lubricates the free surface of the peritoneum may be so tainted by the fluid which transudes from the disorganised covering of the tumour

that the osmotic phenomena may be disturbed by its action.

(b) Fatty degeneration.

In unilocular cysts fatty degeneration is not so frequently observed as in multicystic and more or less solid tumours of the ovary. Sometimes the pedicle even of an ovarian tumour may undergo fatty degeneration to such an extent that rupture of this structure may eventually take place, and the tumour thus liberated may, as in Case 2, be nourished by other structures with which it has contracted adhesions. When the peritoneum covering an ovarian tumour undergoes fatty degeneration there is a marked tendency for fluid to accumulate in the abdominal cavity, and it is highly probable that this accumulation is due to the contamination of the peritoneal liquid by the fluid which transudes from the degenerate portion of the membrane, as thereby the harmonious relationship of the exosmotic and endosmotic currents may be disturbed. In the majority of cases the fatty degeneration is caused by an interference with the blood-supply to the affected area. In multicystic tumours the blood-supply is often prematurely cut off by the rapid disintegration of a septum in which the chief artery runs. More or less exten-

sive fatty degeneration of the tumour will be observed, too, if the blood-vessels in the pedicle are occluded, and this may be determined by a partial twist of the pedicle.

(c) Calcareous infiltration.

In a few rare instances, as in Case 3, the peritoneal covering of an ovarian tumour becomes more or less extensively infiltrated with lime salts. In the majority of these cases the calcareous deposition is preceded by a chronic inflammation or a fatty degeneration, and it is probable that the fluid which accumulates in the peritoneum under such circumstances is dependent more upon the change which precedes the calcareous infiltration than upon the presence of the lime salts, although it is quite possible that the gritty plates on the surface of the tumour may irritate the peritoneum, and excessive transudation may in this manner be favoured.

CASE 1. *Ascites ; multilocular benign cyst of ovary ; peritoneum covering tumour thick and milk-white at spots ; peritoneum generally much thickened.*—Mary M—, aged 57, and married thirty-five years, has had nine children. She ceased menstruating at the age of forty-nine. For eight months patient

has observed that her abdomen has been gradually increasing in size, and during this same time she has suffered from "falling of the womb." She has never complained of any pain in the belly.

The abdomen is greatly distended; it is not, however, tense. The girth at the umbilicus is thirty-eight inches. There is free fluid in the peritoneum. The abdomen contains an irregular mass which reaches to midway between the umbilicus and the ensiform cartilage. By bimanual examination the tumour appears to be connected with the right half of the pelvis.

The tumour—a multilocular cyst of the right ovary—was removed by abdominal section. The peritoneum generally, as well as that covering the tumour, was much thickened. The surface of the tumour was irregularly thickened, and on it were observed three large milk-white spots. Twelve months after the operation there was no reaccumulation of ascitic fluid, and the patient appeared to be in perfect health.

CASE 2. *Fluid in the peritoneum; ovarian tumours in a state of fatty degeneration; rupture of one pedicle; freed tumour enveloped by gut.*—Mary B—, aged 53, and

married twice, has never been pregnant. She ceased menstruating seven years ago. For nineteen months patient has complained of swelling of the belly. Seven months before coming under my observation she was tapped, but the abdomen rapidly thereafter became big again. She complains of no pain, and there is no oedema of the legs.

The abdomen is much distended. The percussion note in the mid-line is dull from the pubes to the umbilicus. Both flanks are dull, but each becomes resonant as patient lies on the opposite side. Fluctuation is readily elicited. On palpation a large globular swelling is felt on the left side just above Poupart's ligament. This swelling can be made to rotate to a certain extent on its own axis, and it appears to be independent of a mass which is located centrally and extends from the pubes to within two inches of the umbilicus. The cervix uteri, which is flattened from before backwards, is pushed against the pubic bone. By bimanual examination the body of the uterus—not enlarged—is felt centrally in close apposition with the anterior abdominal wall. The left side of the pelvis and Douglas's pouch is occupied by a swelling which is fixed to the pelvic floor. This swelling appears to be

continuous with the central abdominal tumour.

The tumours were removed by abdominal section. The central tumour was a large adeno-cystoma of the right ovary in an advanced state of fatty degeneration. It was adherent to the pelvic peritoneum. The tumour on the left side was a cyst, the wall of which was also in an advanced state of fatty degeneration. This tumour was evidently the left ovary ; it possessed no pedicle, and was completely enveloped by mesentery and gut. The peritoneum generally was very thick. Six pints of fluid of a deep amber colour were removed at the time of operation from the abdominal cavity, and when the patient was again examined nine months later there was no evidence of re-accumulation.

CASE 3. Ascites ; almost solid adenoma of right ovary ; cyst of left ovary ; peritoneal covering of both tumours infiltrated with lime salts ; peritoneum generally much thickened.—Sarah H—, aged 68, a widow, has never been pregnant. For four or five years patient has remarked that her abdomen has been increasing in size. This enlargement has produced a feeling of weight, but it has

occurred without pain being experienced. There is slight œdema of both legs.

The abdomen is prominent. In the mid-line the percussion note is dull from the pubes to two and three quarter inches above the umbilicus. From Poupart's ligament the dulness extends in the nipple line on the right side to six inches, and on the left side to two inches above the umbilical level. Fluctuation is readily elicited, and it is evident that the peritoneum contains free fluid. On dipping the tips of the fingers they impinge against a hard floating body in the right half of the abdomen below the umbilicus. In the left iliac and lumbar regions the sense of resistance is more marked than elsewhere, and the impression is that of an ill-defined tumour pressed against the anterior abdominal wall. The cervix uteri is located rather towards the right wall of the pelvis. Posteriorly and on the left side of the cervix the vaginal roof is puckered. Pressure abdominally over the ill-defined tumour in the left iliac and lumbar regions is conveyed to the cervix, and arouses a suspicion that this tumour is the body of the uterus much enlarged. The temperature is normal.

The tumours were removed by abdominal section. The right ovary was a large and

almost solid adenoma weighing about four pounds. It possessed a good pedicle, and had contracted no adhesions. The peritoneum covering this tumour was irregularly thickened, and besides presenting here and there a milk-white appearance, it was extensively infiltrated with lime salts. The tumour on the left side was an unilocular cyst of the left ovary. It was almost sessile, and was adherent to the left half of the uterus. This cyst contained more than a pint of creamy brown (purulent-looking) fluid. The peritoneal covering of this tumour was, like that of its fellow, thick and calcareous, and studded with milk-white spots. The abdominal cavity contained about six pints of straw-coloured serum, and the peritoneum generally was greatly thickened.

Although ascites is so commonly observed in association with malignant and innocent but degenerate tumours of the ovary, it is noteworthy that the uterus may become transformed into a huge malignant growth, and any of the fibro-myomatous tumours, which so commonly develop in the uterus, may degenerate without the peritoneal fluid showing any marked disposition to accumulate. The occurrence of ascites, therefore, it would appear, depends more upon the

peculiar structure of the organ affected than upon the disease itself. In a few rare instances, however, as in the following case, fluid may accumulate in the peritoneum in association with a fibro-myoma of the uterus undergoing fatty degeneration.

Elizabeth S—, aged 33, and married thirteen years, has had three children. The last child was born nine years ago. The menstrual discharge has reappeared regularly, and its amount, although variable, has never been excessive. Three years ago patient detected a small lump in the lower and central portion of the abdomen. During the last six months her belly has rapidly increased in size, but she has never experienced any pain. There is no œdema of the legs. At the umbilicus the girth of the abdomen, which is prominent, measures thirty-nine inches. In the mid-line the percussion note is dull from the pubes to two inches above the umbilicus. Both flanks are dull, and this dulness varies with the position of the patient. Fluctuation is readily obtained. On dipping in the hypogastric region the fingers impinge against a large hard mass, whilst to the left of this is detected a small floating body. By bimanual examination the hypogastric tumour appears

to be the body of the uterus greatly enlarged.

The tumour, which was removed by abdominal section, was an oedematous fibromyoma growing from the fundus of the uterus. The upper portion of this tumour was soft and in an advanced state of fatty degeneration. A piece of small intestine was adherent to the posterior surface of the uterus below the pedicle of the fibroid. A small cyst, which was the free floating body felt before operation, escaped with the ascitic fluid, and it is probable that this had originally been a subperitoneal adenoma of the uterus which had undergone cystic change.

The following cases, being rare examples of ascites, are not classified.

CASE 1. *Fluid in the peritoneum; benign papilloma originating probably at fimbriated extremity of Fallopian tube; flaccid cysts in omentum.*—Selina H—, aged 30 and married eleven years, has had two children. The last child was born nine years ago. Menstruation recurs regularly, and the discharge is of the usual amount. For three months patient has remarked that her abdomen has been increasing in size. No pain has been experienced. The abdomen is prominent

but flaccid. The percussion note is resonant everywhere except in the flanks, both of which are dull. There is evidently some fluid in the peritoneum, but it is difficult to say whether it is free or not. By bimanual examination the body of the uterus, which is of a normal size, can be readily defined. It is drawn towards the pubic bone. To the left of the uterus there is felt an ill-defined thickening, whilst on the right side the ovary in an apparently normal state is felt.

This patient was kept under observation for five months. Her condition generally and the state of the abdomen was then as before, but vaginally on the right side of the uterus I detected now several small nodular masses. Fearing the ascites might be due to a malignant growth on the right side of the pelvis abdominal exploration was advised. The peritoneum contained a larger quantity of fluid than one had anticipated. It was free and of a deep sherry colour. The omentum displayed two large flaccid cysts, but these most probably were of the nature of a simple oedema. A papillomatous mass was detected in the region of the right ovary and fimbriated extremity of the Fallopian tube. This villous growth (which was adenomatous in structure) was removed after its base had

been lightly ligatured. A similar mass was found on the left side in the situation of the ovary, but it was so diffuse and bled so freely when touched that it was deemed inadvisable to attempt to remove.

Ten months after operation this patient again came under my observation complaining of a swelling in the left half of the abdomen. She then stated that this swelling appeared to increase at each menstrual period. The tumour filled the left half of the abdomen. A second operation was performed. The tumour, a haemorrhagic cyst, was so adherent universally that it was opened and stitched to the abdominal wall. Fifteen months after this second operation the patient was in fairly good health, but the tract of the drainage-tube was still discharging a purulent fluid. I am unable to say in which structure this haemorrhagic cyst had most probably developed.

CASE 2. Ascites ; general thickening of peritoneum ; contraction and fibroid thickening of stomach ; pleuræ universally adherent.—Annie L—, aged 35 and married twelve years, has had one child. Menstruation recurs regularly, and she was last “unwell” fourteen days ago. For twelve months patient has

complained more or less constantly of pain in the belly, but this has never been severe. For twelve months she has had "biliary attacks" occasionally, but during the last four months she has vomited once or oftener every day. For three months the abdomen has been gradually getting bigger, and during this time she has rapidly lost flesh.

The abdomen is enlarged. The girth at the umbilicus is thirty-nine and a half inches. The lower abdomen is dull in the mid-line from the pubes to two inches from the umbilicus. The right flank is dull—but not absolutely—and the left is resonant. Fluctuation is distinct. Everywhere the abdomen is tender to the touch, but palpation reveals no abnormal mass. The vaginal examination was unimportant. During the six months this patient was under observation the fluid in the peritoneum was evacuated by paracentesis twice. The temperature was normal, and there never was any œdema of the lower extremities. She became more and more emaciated, and died from exhaustion.

Necropsy.—On opening the abdomen a large amount of straw-coloured serum escaped, and with it flakes of lymph. The large bowel in its whole extent was enormously distended, whilst the small intestines were gathered like

a ball and firmly matted together centrally in the upper half of the abdomen. The omentum, which was spread out like an apron, was adherent to the pubes. The peritoneum everywhere was thick, and presented a grey appearance. The stomach was contracted to the capacity of about three ounces. Its wall was uniformly thickened to the extent of five eighths of an inch. The pyloric orifice was so constricted that it must have been difficult for fluid even to pass through it. The pelvic peritoneum was so thickened that the ovaries could not be recognised. The parietal and visceral pleuræ in both chests were universally and firmly adherent. Sections of the stomach wall examined microscopically revealed only a very great excess of fibrous tissue.

CASE 3. *Simple effusion into the peritoneum (inflammatory?).*—Emma T—, aged 51 and married twenty-eight years, has had two children. She ceased menstruating two years and a half ago, and about this time patient was under my care on account of vaso-motor and other nerve disturbances consequent upon the cessation of the menstrual phenomenon. For one month she has complained of pain and of a feeling of weight and tight-

ness in the belly. There is no swelling of the legs, and the temperature is normal. The abdomen is prominent and tense; the girth at the umbilicus is forty inches. In the mid-line the percussion note is dull from the pubes to the umbilicus. Fluctuation is readily obtained, and the fluid is unconfined. The veins in the abdominal wall are not prominent. Palpation and dipping detect no tumour. The liver dulness is normal. Nothing important was revealed by vaginal examination. Fourteen days after being first seen the belly was tapped, and a gallon and a half of a deep amber-coloured fluid was drawn off. After this operation no tumour could even then be detected in the abdomen. As the fluid rapidly re-accumulated abdominal section was performed a fortnight later. Two gallons of fluid were removed. The peritoneum everywhere was thick, red, and irritable-looking. The omentum was very thick (inflammatory apparently). The ovaries were small but healthy, and there was no evidence of disease in any of the other organs. The fluid was removed as completely as possible by sponges, but the peritoneum was not flushed with water. One month after the second operation there was no evidence of fluid in the abdominal cavity.

Sometimes the fluid which is found free in the abdominal cavity has escaped thither in consequence of the rupture of an ovarian cyst.

Any tumour which contains fluid may, under favorable circumstances, rupture into the peritoneum, but the symptoms resulting therefrom usually indicate immediately the occurrence of such an accident, and it seldom happens that the extravasated material exerts practically no prejudicial influence on the peritoneum, and appears to remain quiescent for a very great length of time. In the class of case we are now considering, the rupture occurs, as a rule, without any new symptom being thereby produced, and without the patient being conscious even of any very decided alteration in her state. The cystoma of the ovary which tends more especially to behave in this manner is that which contains a material resembling calf-foot jelly. It is usually a multilocular tumour, and in its interior one or more shaggy villous growths (adenoid in structure) are often found. The wall and septa of this variety of cyst present as a rule a bluish appearance, and they are invariably so thin and soft that sooner or later the tumour bursts spontaneously. In conse-

quence of a fatty degeneration of the cyst-wall or the penetration of the same by a papilloma from the interior, other cysts of the ovary which are also generally multilocular may in like manner rupture. Except, however, the rupture is caused by direct violence it is more than probable that in the majority of cases fluid begins to accumulate in the peritoneum before this accident happens. Colloid infiltration or degeneration of the omentum is sometimes observed in those cases in which an ovarian tumour containing calf-foot jelly-like material or villous growths has ruptured into the peritoneum. Occasionally, however, this change begins in the omentum before rupture takes place, and under such circumstances it is probably effected by osmose.

The three following cases were good examples of fluid in the peritoneum in consequence of the rupture of an ovarian cyst.

CASE 1. Fluid (calf-foot jelly-like) in peritoneum due to the rupture of two multilocular ovarian cysts; colloid infiltration of omentum (innocent?).—Jane M.—, aged 60 and married, has had three children. She ceased menstruating at the age of forty-five. Fifteen

months ago patient remarked that her abdomen was increasing in size. It appeared then to be more prominent on the right than the left side. Gradually the belly has increased in size, and this change has been unaccompanied by pain. There is no oedema of the legs. The abdomen is much distended. The girth at the umbilicus is thirty-six and a half inches. As patient lies on her back both flanks are dull, and the percussion note in the mid-abdominal line is dull from the pubes to three inches above the umbilicus. The dullness is variable in outline, and is affected gradually by the position of the patient. Fluctuation is indistinct. In the right and left iliac and lumbar regions the abdomen is more resistent than elsewhere. Vaginally to the right of the cervix is felt an ill-defined swelling which is movable. Abdominal section was performed. The peritoneum contained a large quantity of a thick calf-foot jelly-like material. Both ovaries were converted into large multilocular cysts, and both tumours had ruptured. The universal cyst wall, as well as that of each minor cyst, was extremely thin and soft. The portions of the tumour that remained intact presented a bluish appearance. Both cysts possessed good pedicles, and there were no adhesions.

The omentum, which was enormously thickened, was studded with vesicles of about the size of a small pea, the result of colloid infiltration or degeneration. This change appeared to be of an innocent rather than a malignant nature. No papillomatous growths were found in the ovarian cysts. Six months after operation there was no evidence of disturbance from the colloid change in the omentum : the tumour could be felt, but it appeared to be smaller than at the time of operation.

CASE 2. Fluid like calf-foot jelly in the peritoneum consequent upon the rupture of an ovarian cyst.—Margaret R—, aged 43 and single, ceased menstruating twelve months ago. For ten months patient has complained more or less of a peculiar “cramp-like sensation” in both iliac regions, but more especially in the right. During this same time the abdomen has shown a varying disposition to increase in size ; sometimes it appeared to be larger and sometimes smaller. For four or five months she has been losing flesh. There is no œdema of the legs. The belly is prominent, but not tense. At the umbilicus the girth is thirty-five and a half inches. The percussion note is dull in the mid-line

from the pubes to one inch above the umbilicus. The left flank is dull, the right is resonant. When patient has lain a couple of minutes on the right side the left flank becomes resonant, but the dulness in the left flank does not forthwith return when the patient turns again on to her back. Fluctuation is with difficulty elicited, and it is evident that the fluid is rather thick, as the wave-length is greater than in the case of thin fluid. The uterus as a whole is drawn towards the right wall of the pelvis. Behind the uterus is a somewhat pointed and cystic swelling like a large sausage, and to the left of this is felt a fibrous network, into the interstices of which the tip of the index finger can pass.

Abdominal section was performed, and a large quantity of calf-foot jelly like material was scooped out of the peritoneum by the hand. The right ovary had undergone cystic degeneration, and had ruptured. One loculus of the original cyst was still intact, and it contained a thick yellowish material similar to that which was found free in the abdominal cavity. In a portion of the cyst-wall, which was adherent to the floor of Douglas's pouch, was a villous-looking growth. This villous growth was evidently not malig-

nant. Its minute structure was that of an adenoma.

CASE 3. Thin but sticky fluid in the peritoneum consequent upon the rupture of an ovarian cyst.—Annie H—, aged 42 and single, menstruates regularly, and the flow is of the usual amount. Three weeks ago patient suddenly experienced a sharp pain in the abdomen on the left side, and for four days thereafter she complained more or less of pain in the left iliac and lumbar regions. During the last fortnight she has been quite free from pain, but she has observed that lately her belly has been increasing in size. There is no swelling of the lower extremities. The examination of the abdomen reveals free fluid in the peritoneum, and on dipping in the left side the fingers impinge against a freely movable body of some size. The tumour, which was removed by abdominal section, was a multilocular cyst of the left ovary. One large loculus of the cyst had ruptured, but the seat of rupture did not correspond with a papillomatous growth, although the interior of this and two other loculi contained papillomatous tumours. The right ovary was healthy, and was therefore not removed. Six pints of fluid escaped

from the peritoneum ; it was of a deep amber colour, thin and sticky. There were no adhesions.

Conditions which may simulate Free Fluid in the Peritoneum

1. *Ovarian cyst*.—A large and chiefly unilocular cyst of the ovary which fills as completely as possible the abdominal cavity may be mistaken for ascites. Under such circumstances the fluctuation wave may be most easily elicited on account of the bulk of the fluid being contained in one sac, the wall of which is extremely thin. Occasionally, as in the case which here follows, the cyst wall may even be extensively incorporated with the peritoneum. Both flanks may be dull, and the percussion note in these regions may be more or less altered when the position of the patient is changed.

CASE. *Large unilocular cyst of ovary adherent to anterior abdominal wall simulating ascites*.—Mary J.—, aged 42 and married fifteen years, has never been pregnant. Menstruation recurs regularly, and she was last unwell three days ago. Four years ago patient was knocked down by a blow on the abdomen, and two months afterwards she

began to complain of pain in and swelling of the belly. Before coming under my observation paracentesis had been performed three times, and on each occasion it seems about one and a half gallons of fluid were removed. She has never noted any swelling of the legs, and ever since the blow received four years ago she has complained more or less of pain in the belly. The abdomen is distended, but not tense. The girth at the umbilicus is forty inches. Fluctuation is very easily elicited. In the mid-line the percussion note is dull from the pubes to midway between the umbilicus and ensiform cartilage. Both flanks are dull, but each becomes subresonant when the patient lies on the opposite side. The cervix uteri is in good position. To the left of the cervix and lying on the pelvic floor is felt a small, hard, and somewhat corrugated swelling, and this mass is evidently not papillomatous.

On abdominal section being performed the fluid was found to be encysted. The cyst was a large unilocular tumour of the right ovary, with a good pedicle. It was universally adherent to the anterior abdominal wall, and was attached by a fibrous band quite three inches in length to the free margin of the left ovary. The abdominal adhesions

were easily broken down, and the patient made a good recovery.

2. *Hydatid tumour*.—A single hydatid cyst may occasionally fill the abdomen so completely as to resemble ascites. The manner in which the abdomen appeared in the first instance to increase in size will aid us if the patient is able to give this information. The majority of hydatids that attain a great size originate in the liver, and therefore grow downwards. The tumour may originate in the pelvis. The two cases of hydatid developing in the pelvis that have come under my observation were multiple.

3. *A distended urinary bladder*.—Sir Everard Home states that John Hunter once tapped a distended bladder, believing that he had to deal with a case of ascites.

Treatment of Fluid in the Peritoneum

It is evident that the treatment to be adopted in cases of ascites must vary according to the cause of the disorder, and it is therefore very necessary that we should be able to determine approximately the cause.

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